

DIVISION B—SCIENCE

SEC. 20001. PURPOSES.

The purposes of this division are to—

(1) contribute to a national energy strategy through an energy research and development program that supports basic energy research and provides mechanisms to develop, demonstrate, and promote the commercial application of new energy technologies in partnership with industry;

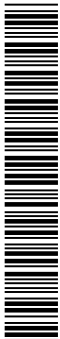
(2) protect and strengthen the Nation's economy, standard of living, and national security by reducing dependence on imported energy;

(3) meet future needs for energy services at the lowest total cost to the Nation, giving balanced and comprehensive consideration to technologies that improve the efficiency of energy end uses and that enhance energy supply;

(4) reduce the environmental impacts of energy production, distribution, transportation, and use;

(5) help increase domestic production of energy, increase the availability of hydrocarbon reserves, and lower energy prices; and

(6) stimulate economic growth and enhance the ability of United States companies to compete in future markets for advanced energy technologies.



1 **SEC. 20002. GOALS.**

2 (a) IN GENERAL.—In order to achieve the purposes
3 of this division, the Secretary shall conduct a balanced set
4 of programs of energy research, development, demonstra-
5 tion, and commercial application, guided by the following
6 goals:

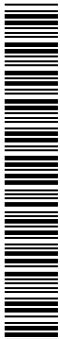
7 (1) ENERGY EFFICIENCY.—

8 (A) BUILDINGS.—Develop, in partnership
9 with industry, technologies, designs, and pro-
10 duction methods that will enable an average 25
11 percent increase by 2010 in the energy effi-
12 ciency of all new buildings, as compared to a
13 new building in 1996.

14 (B) INDUSTRY.—Develop, in partnership
15 with industry, technologies, designs, and pro-
16 duction methods that will enable the energy in-
17 tensity of the major energy-consuming indus-
18 tries to improve by at least 25 percent by 2010
19 as compared to 1991.

20 (C) VEHICLES.—Develop, in partnership
21 with industry, technologies that will enable—

22 (i) by 2010, mid-sized passenger auto-
23 mobiles with a fuel economy of 80 miles
24 per gallon;



1 (ii) by 2010, light trucks (classes 1
2 and 2a) with a fuel economy of 60 miles
3 per gallon;

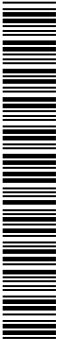
4 (iii) by 2010, medium trucks and
5 buses (classes 2b through 6 and class 8
6 transit buses) with a fuel economy, in ton-
7 miles per gallon for trucks and passenger
8 miles per gallon for buses, that is 3 times
9 that of year 2000 equivalent vehicles;

10 (iv) by 2010, heavy trucks (classes 7
11 and 8) with a fuel economy, in ton-miles
12 per gallon, that is 2 times that of year
13 2000 equivalent vehicles; and

14 (v) by 2020, meeting the goal of the
15 President's Hydrogen Initiative.

16 (2) DISTRIBUTED ENERGY AND ELECTRIC EN-
17 ERGY SYSTEMS.—

18 (A) DISTRIBUTED GENERATION.—Develop,
19 in partnership with industry, technologies based
20 on natural gas that achieve electricity gener-
21 ating efficiencies greater than 40 percent by
22 2015 for on-site, or distributed, generation
23 technologies.



1 (B) ELECTRIC ENERGY SYSTEMS AND
2 STORAGE.—Develop, in partnership with
3 industry—

4 (i) technologies for generators and
5 transmission, distribution, and storage sys-
6 tems that combine high capacity with high
7 efficiency (particularly for electric trans-
8 mission facilities in rural and remote
9 areas);

10 (ii) new transmission and distribution
11 technologies, including flexible alternating
12 current transmission systems, composite
13 conductor materials, advanced protection
14 devices, and controllers;

15 (iii) technologies for interconnection
16 of distributed energy resources with elec-
17 tric power systems;

18 (iv) high-temperature superconducting
19 materials for power delivery equipment
20 such as transmission and distribution ca-
21 bles, transformers, and generators; and

22 (v) real-time transmission and dis-
23 tribution system control technologies that
24 provide for continual exchange of informa-



1 tion between generation, transmission, dis-
2 tribution, and end-user facilities.

3 (3) RENEWABLE ENERGY.—

4 (A) WIND POWER.—Develop, in partner-
5 ship with industry, technologies and designs
6 that will—

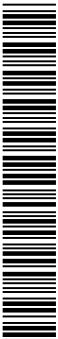
7 (i) reduce the cost of wind power by
8 40 percent by 2012 as compared to 2000;
9 and

10 (ii) expand utilization of class 3 and 4
11 winds.

12 (B) PHOTOVOLTAICS.—Develop, in part-
13 nership with industry, total photovoltaic sys-
14 tems with installed costs of \$5,000 per peak kil-
15 owatt by 2005 and \$2000 per peak kilowatt by
16 2015.

17 (C) SOLAR THERMAL SYSTEMS.—Develop,
18 in partnership with industry, solar power tech-
19 nologies (including baseload solar power) that
20 combine high-efficiency and high-temperature
21 receivers with advanced thermal storage and
22 power cycles to accommodate peak loads and
23 reduce lifecycle costs.

24 (D) GEOTHERMAL ENERGY.—Develop, in
25 partnership with industry, technologies and



1 processes based on advanced hydrothermal sys-
2 tems and advanced heat and power systems, in-
3 cluding geothermal or ground source heat pump
4 technology, with a specific focus on—

5 (i) improving exploration and charac-
6 terization technology to increase the prob-
7 ability of drilling successful wells from 20
8 percent to 40 percent by 2010;

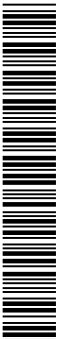
9 (ii) reducing the cost of drilling by
10 2008 to an average cost of \$225 per foot;

11 (iii) developing enhanced geothermal
12 systems technology with the potential to
13 double the usable geothermal resource
14 base, as compared to the date of enact-
15 ment of this Act; and

16 (iv) reducing the cost of installing the
17 ground loop of ground-source heat pumps
18 by 30 percent by 2007 compared to the
19 cost in 2000.

20 (E) BIOMASS-BASED POWER SYSTEMS.—

21 Develop, in partnership with industry, inte-
22 grated power generating systems, advanced con-
23 version, and feedstock technologies capable of
24 producing electric power that is cost-competitive
25 with fossil-fuel generated electricity by 2010,



1 through co-production of fuels, chemicals, and
2 other products under subparagraph (F).

3 (F) BIOFUELS.—Develop, in partnership
4 with industry, new and emerging technologies
5 and biotechnology processes capable of
6 making—

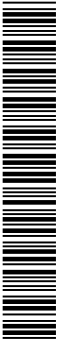
7 (i) gaseous and liquid biofuels that
8 are price-competitive, by 2010, with gaso-
9 line or diesel in either internal combustion
10 engines or fuel cells; and

11 (ii) biofuels, biobased polymers, and
12 chemicals, including those derived from
13 lignocellulosic feedstock, with particular
14 emphasis on developing biorefineries that
15 use enzyme-based processing systems.

16 (G) HYDROPOWER.—Develop, in partner-
17 ship with industry, a new generation of turbine
18 technologies that will increase generating capac-
19 ity and be less damaging to fish and aquatic
20 ecosystems.

21 (4) FOSSIL ENERGY.—

22 (A) POWER GENERATION.—Develop, in
23 partnership with industry, technologies, includ-
24 ing precombustion technologies, by 2015 with
25 the capability of realizing—



1 (i) electricity generating efficiencies of
2 75 percent (lower heating value) for nat-
3 ural gas; and

4 (ii) widespread commercial application
5 of combined heat and power with thermal
6 efficiencies of more than 85 percent (high-
7 er heating value).

8 (B) OFFSHORE OIL AND GAS RE-
9 SOURCES.—Develop, in partnership with indus-
10 try, technologies to—

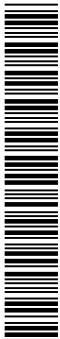
11 (i) extract methane hydrates in coast-
12 al waters of the United States; and

13 (ii) develop natural gas and oil re-
14 serves in the ultra-deepwater of the Cen-
15 tral and Western Gulf of Mexico, with a
16 focus on improving, while lowering costs
17 and reducing environmental impacts, the
18 safety and efficiency of—

19 (I) the recovery of ultra-deep-
20 water resources; and

21 (II) sub-sea production tech-
22 nology used for such recovery.

23 (C) ONSHORE OIL AND GAS RESOURCES.—
24 Advance the science and technology available to
25 domestic onshore petroleum producers, particu-



1 larly independent producers of oil or gas,
2 through—

3 (i) advances in technology for explo-
4 ration and production of domestic petro-
5 leum resources, particularly those not ac-
6 cessible with current technology;

7 (ii) improvement in the ability to ex-
8 tract hydrocarbons (including heavy oil)
9 from known reservoirs and classes of res-
10 ervoirs; and

11 (iii) development of technologies and
12 practices that reduce the impact on the en-
13 vironment from petroleum exploration and
14 production.

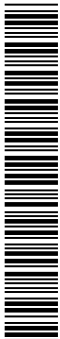
15 (D) TRANSPORTATION FUELS.—Increase
16 the availability of transportation fuels by focus-
17 ing research on—

18 (i) reducing the cost of producing
19 transportation fuels from coal and natural
20 gas; and

21 (ii) indirect liquefaction of coal and
22 biomass.

23 (5) NUCLEAR ENERGY.—

24 (A) EXISTING REACTORS.—Support re-
25 search to extend the lifetimes of existing United



1 States nuclear power reactors, and increase
2 their reliability while optimizing their current
3 operations for greater efficiencies.

4 (B) ADVANCED REACTORS.—Develop, in
5 partnership with industry—

6 (i) advanced, efficient, lower cost, and
7 passively safe reactor designs;

8 (ii) proliferation-resistant and high-
9 burn-up nuclear fuels; and

10 (iii) technologies to minimize genera-
11 tion of radioactive materials and improve
12 the management of nuclear waste.

13 (C) NUCLEAR SCIENTISTS AND ENGI-
14 NEERS.—Attract new students and faculty to
15 the nuclear sciences, nuclear engineering, and
16 related fields (including health physics, nuclear
17 medicine, nuclear chemistry, and
18 radiochemistry).

19 (6) HYDROGEN.—Carry out programs related
20 to hydrogen in the Fossil Fuel Program and the Nu-
21 clear Energy Program.

22 (b) REVIEW AND ASSESSMENT OF GOALS.—

23 (1) EVALUATION AND MODIFICATION.—Based
24 on amounts appropriated and developments in
25 science and technology, the Secretary shall evaluate



1 the goals set forth in subsection (a) at least once
2 every 5 years, and shall report to the Congress any
3 proposed modifications to the goals.

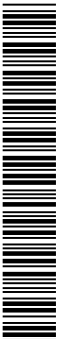
4 (2) CONSULTATION.—In evaluating and pro-
5 posing modifications to the goals as provided in
6 paragraph (1), the Secretary shall solicit public
7 input.

8 (3) PUBLIC COMMENT.—(A) After consultation
9 under paragraph (2), the Secretary shall publish in
10 the Federal Register a set of draft modifications to
11 the goals for public comment.

12 (B) Not later than 60 days after the date of
13 publication of draft modifications under subpara-
14 graph (A), and after consideration of any public
15 comments received, the Secretary shall publish the
16 final modifications, including a summary of the pub-
17 lic comments received, in the Federal Register.

18 (4) EFFECTIVE DATE.—No modification to
19 goals under this section shall take effect before the
20 date which is 5 years after the date of enactment of
21 this Act.

22 (c) EFFECT OF GOALS.—(1) Nothing in paragraphs
23 (1) through (6) of subsection (a), or any subsequent modi-
24 fication to the goals therein pursuant to subsection (b),
25 shall—



1 (A) create any new—

2 (i) authority for any Federal agency; or

3 (ii) requirement for any other person;

4 (B) be used by a Federal agency to support the
5 establishment of regulatory standards or regulatory
6 requirements; or

7 (C) alter the authority of the Secretary to make
8 grants or other awards.

9 (2) Nothing in this subsection shall be construed to
10 limit the authority of the Secretary to impose conditions
11 on grants or other awards based on the goals in subsection
12 (a) or any subsequent modification thereto.

13 **SEC. 20003. DEFINITIONS.**

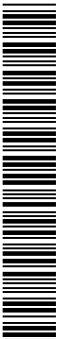
14 For purposes of this division:

15 (1) DEPARTMENT.—The term “Department”
16 means the Department of Energy.

17 (2) DEPARTMENTAL MISSION.—The term “de-
18 partmental mission” means any of the functions
19 vested in the Secretary of Energy by the Depart-
20 ment of Energy Organization Act (42 U.S.C. 7101
21 et seq.) or other law.

22 (3) INDEPENDENT PRODUCER OF OIL OR
23 GAS.—

24 (A) IN GENERAL.—The term “independent
25 producer of oil or gas” means any person who



1 produces oil or gas other than a person to
2 whom subsection (c) of section 613A of the In-
3 ternal Revenue Code of 1986 does not apply by
4 reason of paragraph (2) (relating to certain re-
5 tailers) or paragraph (4) (relating to certain re-
6 finers) of section 613A(d) of such Code.

7 (B) RULES FOR APPLYING PARAGRAPHS (2)
8 AND (4) OF SECTION 613A(d).—For purposes of
9 subparagraph (A), paragraphs (2) and (4) of
10 section 613A(d) of the Internal Revenue Code
11 of 1986 shall be applied by substituting “cal-
12 endar year” for “taxable year” each place it ap-
13 pears in such paragraphs.

14 (4) INSTITUTION OF HIGHER EDUCATION.—The
15 term “institution of higher education” has the
16 meaning given that term in section 101(a) of the
17 Higher Education Act of 1965 (20 U.S.C. 1001(a)).

18 (5) JOINT VENTURE.—The term “joint ven-
19 ture” has the meaning given that term under section
20 2 of the National Cooperative Research and Produc-
21 tion Act of 1993 (15 U.S.C. 4301).

22 (6) NATIONAL LABORATORY.—The term “Na-
23 tional Laboratory” means any of the following lab-
24 oratories owned by the Department:

25 (A) Ames National Laboratory.



- 1 (B) Argonne National Laboratory.
- 2 (C) Brookhaven National Laboratory.
- 3 (D) Fermi National Laboratory.
- 4 (E) Idaho National Engineering and Envi-
- 5 ronmental Laboratory.
- 6 (F) Lawrence Berkeley National Labora-
- 7 tory.
- 8 (G) Lawrence Livermore National Labora-
- 9 tory.
- 10 (H) Los Alamos National Laboratory.
- 11 (I) National Energy Technology Labora-
- 12 tory.
- 13 (J) National Renewable Energy Labora-
- 14 tory.
- 15 (K) Oak Ridge National Laboratory.
- 16 (L) Pacific Northwest National Labora-
- 17 tory.
- 18 (M) Princeton Plasma Physics Laboratory.
- 19 (N) Sandia National Laboratories.
- 20 (O) Thomas Jefferson National Accel-
- 21 erator Facility.
- 22 (7) NONMILITARY ENERGY LABORATORY.—The
- 23 term “nonmilitary energy laboratory” means any of
- 24 the following laboratories of the Department:
- 25 (A) Ames National Laboratory.

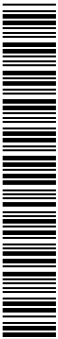


- 1 (B) Argonne National Laboratory.
2 (C) Brookhaven National Laboratory.
3 (D) Fermi National Laboratory.
4 (E) Lawrence Berkeley National Labora-
5 tory.
6 (F) Oak Ridge National Laboratory.
7 (G) Pacific Northwest National Labora-
8 tory.
9 (H) Princeton Plasma Physics Laboratory.
10 (I) Stanford Linear Accelerator Center.
11 (J) Thomas Jefferson National Accelerator
12 Facility.

13 (8) SECRETARY.—The term “Secretary” means
14 the Secretary of Energy.

15 (9) SINGLE-PURPOSE RESEARCH FACILITY.—
16 The term “single-purpose research facility” means
17 any of the following primarily single-purpose entities
18 owned by the Department:

- 19 (A) East Tennessee Technology Park.
20 (B) Fernald Environmental Management
21 Project.
22 (C) Kansas City Plant.
23 (D) Nevada Test Site.
24 (E) New Brunswick Laboratory.
25 (F) Pantex Weapons Facility.



- 1 (G) Savannah River Technology Center.
2 (H) Stanford Linear Accelerator Center.
3 (I) Y-12 facility at Oak Ridge National
4 Laboratory.
5 (J) Waste Isolation Pilot Plant.
6 (K) Any other similar organization of the
7 Department designated by the Secretary that
8 engages in technology transfer, partnering, or
9 licensing activities.

10 **TITLE I—RESEARCH AND**
11 **DEVELOPMENT**

12 **Subtitle A—Energy Efficiency**

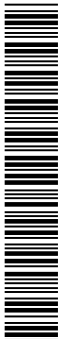
13 **PART 1—AUTHORIZATION OF APPROPRIATIONS**

14 **SEC. 21101. ENERGY EFFICIENCY.**

15 (a) IN GENERAL.—The following sums are author-
16 ized to be appropriated to the Secretary for energy effi-
17 ciency and conservation research, development, dem-
18 onstration, and commercial application activities, includ-
19 ing activities authorized under this subtitle:

- 20 (1) For fiscal year 2004, \$616,000,000.
21 (2) For fiscal year 2005, \$695,000,000.
22 (3) For fiscal year 2006, \$772,000,000.
23 (4) For fiscal year 2007, \$865,000,000.

24 (b) ALLOCATIONS.—From amounts authorized under
25 subsection (a), the following sums are authorized:



1 (1) LIGHTING SYSTEMS.—For activities under
2 section 21111, \$50,000,000 for each of fiscal years
3 2004 through 2007.

4 (2) ELECTRIC MOTOR CONTROL TECH-
5 NOLOGY.—For activities under section 21122,
6 \$2,000,000 for each of fiscal years 2004 through
7 2007.

8 (3) SECONDARY ELECTRIC VEHICLE BATTERY
9 USE PROGRAM.—For activities under section
10 21132—

11 (A) for fiscal year 2004, \$4,000,000;

12 (B) for fiscal year 2005, \$7,000,000;

13 (C) for fiscal year 2006, \$7,000,000; and

14 (D) for fiscal year 2007, \$7,000,000.

15 (4) ENERGY EFFICIENCY SCIENCE INITIA-
16 TIVE.—For activities under section 21141—

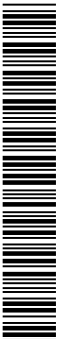
17 (A) for fiscal year 2004, \$20,000,000;

18 (B) for fiscal year 2005, \$25,000,000;

19 (C) for fiscal year 2006, \$30,000,000; and

20 (D) for fiscal year 2007, \$35,000,000.

21 (c) EXTENDED AUTHORIZATION.—There are author-
22 ized to be appropriated to the Secretary for activities
23 under section 21111, \$50,000,000 for each of fiscal years
24 2008 through 2012.



1 (d) LIMITS ON USE OF FUNDS.—None of the funds
2 authorized to be appropriated under this section may be
3 used for—

4 (1) the promulgation and implementation of en-
5 ergy efficiency regulations;

6 (2) the Weatherization Assistance Program
7 under part A of title IV of the Energy Conservation
8 and Production Act;

9 (3) the State Energy Program under part D of
10 title III of the Energy Policy and Conservation Act;
11 or

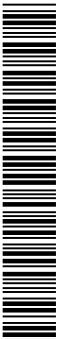
12 (4) the Federal Energy Management Program
13 under part 3 of title V of the National Energy Con-
14 servation Policy Act.

15 **PART 2—LIGHTING SYSTEMS**

16 **SEC. 21111. NEXT GENERATION LIGHTING INITIATIVE.**

17 (a) IN GENERAL.—The Secretary shall carry out a
18 Next Generation Lighting Initiative in accordance with
19 this section to support research, development, demonstra-
20 tion, and commercial application activities related to ad-
21 vanced solid-state lighting technologies based on white
22 light emitting diodes.

23 (b) OBJECTIVES.—The objectives of the initiative
24 shall be—



1 (1) to develop, by 2012, advanced solid-state
2 lighting technologies based on white light emitting
3 diodes that, compared to incandescent and fluores-
4 cent lighting technologies, are—

5 (A) longer lasting;

6 (B) more energy-efficient; and

7 (C) cost-competitive;

8 (2) to develop an inorganic white light emitting
9 diode that has an efficiency of 160 lumens per watt
10 and a 10-year lifetime; and

11 (3) to develop an organic white light emitting
12 diode with an efficiency of 100 lumens per watt with
13 a 5-year lifetime that—

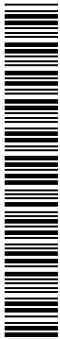
14 (A) illuminates over a full color spectrum;

15 (B) covers large areas over flexible sur-
16 faces; and

17 (C) does not contain harmful pollutants,
18 such as mercury, typical of fluorescent lamps.

19 (c) FUNDAMENTAL RESEARCH.—

20 (1) CONSORTIUM.—The Secretary shall carry
21 out the fundamental research activities of the Next
22 Generation Lighting Initiative through a private
23 consortium (which may include private firms, trade
24 associations and institutions of higher education),
25 which the Secretary shall select through a competi-



1 tive process. Each proposed consortium shall submit
2 to the Secretary such information as the Secretary
3 may require, including a program plan agreed to by
4 all participants of the consortium.

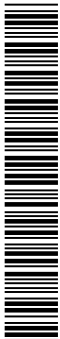
5 (2) JOINT VENTURE.—The consortium shall be
6 structured as a joint venture among the participants
7 of the consortium. The Secretary shall serve on the
8 governing council of the consortium.

9 (3) ELIGIBILITY.—To be eligible to be selected
10 as the consortium under paragraph (1), an applicant
11 must be broadly representative of United States
12 solid-state lighting research, development, and man-
13 ufacturing expertise as a whole.

14 (4) GRANTS.—(A) The Secretary shall award
15 grants for fundamental research to the consortium,
16 which the consortium may disburse to researchers,
17 including those who are not participants of the con-
18 sortium.

19 (B) To receive a grant, the consortium must
20 provide a description to the Secretary of the pro-
21 posed research and list the parties that will receive
22 funding.

23 (C) Grants shall be matched by the consortium
24 pursuant to section 21802.



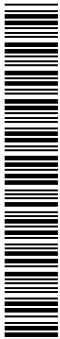
1 (5) NATIONAL LABORATORIES.—National Lab-
2 oratories may participate in the research described
3 in this section, and may receive funds from the con-
4 sortium.

5 (6) INTELLECTUAL PROPERTY.—Participants in
6 the consortium and the Federal Government shall
7 have royalty-free nonexclusive rights to use intellec-
8 tual property derived from research funded pursuant
9 to this subsection.

10 (d) DEVELOPMENT, DEMONSTRATION, AND COM-
11 MERCIAL APPLICATION.—The Secretary shall carry out
12 the development, demonstration, and commercial applica-
13 tion activities of the Next Generation Lighting Initiative
14 through awards to private firms, trade associations, and
15 institutions of higher education. In selecting awardees, the
16 Secretary may give preference to members of the consor-
17 tium selected pursuant to subsection (c).

18 (e) PLANS AND ASSESSMENTS.—(1) The consortium
19 shall formulate an annual operating plan which shall in-
20 clude research priorities, technical milestones, and plans
21 for technology transfer, and which shall be subject to ap-
22 proval by the Secretary.

23 (2) The Secretary shall enter into an arrangement
24 with the National Academy of Sciences to conduct periodic
25 reviews of the Next Generation Lighting Initiative. The



1 Academy shall review the research priorities, technical
2 milestones, and plans for technology transfer established
3 under paragraph (1) and evaluate the progress toward
4 achieving them. The Secretary shall consider the results
5 of such reviews in evaluating the plans submitted under
6 paragraph (1).

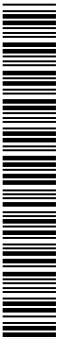
7 (f) AUDIT.—The Secretary shall retain an inde-
8 pendent, commercial auditor to perform an audit of the
9 consortium to determine the extent to which the funds au-
10 thorized by this section have been expended in a manner
11 consistent with the purposes of this section. The auditor
12 shall transmit a report annually to the Secretary, who
13 shall transmit the report to the Congress, along with a
14 plan to remedy any deficiencies cited in the report.

15 (g) SUNSET.—The Next Generation Lighting Initia-
16 tive shall terminate no later than September 30, 2013.

17 (h) DEFINITIONS.—As used in this section:

18 (1) ADVANCED SOLID-STATE LIGHTING.—The
19 term “advanced solid-state lighting” means a
20 semiconducting device package and delivery system
21 that produces white light using externally applied
22 voltage.

23 (2) FUNDAMENTAL RESEARCH.—The term
24 “fundamental research” includes basic research on



1 both solid-state materials and manufacturing proc-
2 esses.

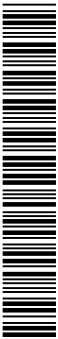
3 (3) INORGANIC WHITE LIGHT EMITTING
4 DIODE.—The term “inorganic white light emitting
5 diode” means an inorganic semiconducting package
6 that produces white light using externally applied
7 voltage.

8 (4) ORGANIC WHITE LIGHT EMITTING DIODE.—
9 The term “organic white light emitting diode”
10 means an organic semiconducting compound that
11 produces white light using externally applied voltage.

12 **PART 3—BUILDINGS**

13 **SEC. 21121. NATIONAL BUILDING PERFORMANCE INITIA-**
14 **TIVE.**

15 (a) INTERAGENCY GROUP.—Not later than 3 months
16 after the date of enactment of this Act, the Director of
17 the Office of Science and Technology Policy shall establish
18 an interagency group to develop, in coordination with the
19 advisory committee established under subsection (e), a
20 National Building Performance Initiative (in this section
21 referred to as the “Initiative”). The interagency group
22 shall be cochaired by appropriate officials of the Depart-
23 ment and the Department of Commerce, who shall jointly
24 arrange for the provision of necessary administrative sup-
25 port to the group.



1 (b) INTEGRATION OF EFFORTS.—The Initiative,
2 working with the National Institute of Building Sciences,
3 shall integrate Federal, State, and voluntary private sector
4 efforts to reduce the costs of construction, operation,
5 maintenance, and renovation of commercial, industrial, in-
6 stitutional, and residential buildings.

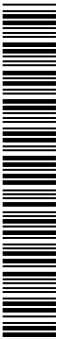
7 (c) PLAN.—Not later than 1 year after the date of
8 enactment of this Act, the interagency group shall submit
9 to Congress a plan for carrying out the appropriate Fed-
10 eral role in the Initiative. The plan shall be based on whole
11 building principles and shall include—

12 (1) research, development, demonstration, and
13 commercial application of systems and materials for
14 new construction and retrofit relating to the building
15 envelope and building system components; and

16 (2) the collection, analysis, and dissemination of
17 research results and other pertinent information on
18 enhancing building performance to industry, govern-
19 ment entities, and the public.

20 (d) DEPARTMENT OF ENERGY ROLE.—Within the
21 Federal portion of the Initiative, the Department shall be
22 the lead agency for all aspects of building performance re-
23 lated to use and conservation of energy.

24 (e) ADVISORY COMMITTEE.—



1 (1) ESTABLISHMENT.—The Director of the Of-
2 fice of Science and Technology Policy shall establish
3 an advisory committee to—

4 (A) analyze and provide recommendations
5 on potential private sector roles and participa-
6 tion in the Initiative; and

7 (B) review and provide recommendations
8 on the plan described in subsection (c).

9 (2) MEMBERSHIP.—Membership of the advisory
10 committee shall include representatives with a broad
11 range of appropriate expertise, including expertise
12 in—

13 (A) building research and technology;

14 (B) architecture, engineering, and building
15 materials and systems; and

16 (C) the residential, commercial, and indus-
17 trial sectors of the construction industry.

18 (f) CONSTRUCTION.—Nothing in this section provides
19 any Federal agency with new authority to regulate build-
20 ing performance.

21 **SEC. 21122. ELECTRIC MOTOR CONTROL TECHNOLOGY.**

22 The Secretary shall conduct a research, development,
23 demonstration, and commercial application program on
24 advanced control devices to improve the energy efficiency



1 of electric motors used in heating, ventilation, air condi-
2 tioning, and comparable systems.

3 **PART 4—VEHICLES**

4 **SEC. 21131. DEFINITIONS.**

5 For purposes of this part, the term—

6 (1) “battery” means an energy storage device
7 that previously has been used to provide motive
8 power in a vehicle powered in whole or in part by
9 electricity; and

10 (2) “associated equipment” means equipment
11 located where the batteries will be used that is nec-
12 essary to enable the use of the energy stored in the
13 batteries.

14 **SEC. 21132. ESTABLISHMENT OF SECONDARY ELECTRIC VE-**
15 **HICLE BATTERY USE PROGRAM.**

16 (a) PROGRAM.—The Secretary shall establish and
17 conduct a research, development, demonstration, and com-
18 mercial application program for the secondary use of bat-
19 teries. Such program shall be—

20 (1) designed to demonstrate the use of batteries
21 in secondary application, including utility and com-
22 mercial power storage and power quality;

23 (2) structured to evaluate the performance, in-
24 cluding useful service life and costs, of such bat-
25 teries in field operations, and evaluate the necessary



1 supporting infrastructure, including reuse and dis-
2 posal of batteries; and

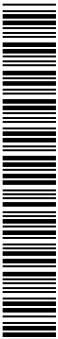
3 (3) coordinated with ongoing secondary battery
4 use programs at the National Laboratories and in
5 industry.

6 (b) SOLICITATION.—(1) Not later than 6 months
7 after the date of the enactment of this Act, the Secretary
8 shall solicit proposals to demonstrate the secondary use
9 of batteries and associated equipment and supporting in-
10 frastructure in geographic locations throughout the
11 United States. The Secretary may make additional solici-
12 tations for proposals if the Secretary determines that such
13 solicitations are necessary to carry out this section.

14 (2)(A) Proposals submitted in response to a solici-
15 tion under this section shall include—

16 (i) a description of the project, including the
17 batteries to be used in the project, the proposed lo-
18 cations and applications for the batteries, the num-
19 ber of batteries to be demonstrated, and the type,
20 characteristics, and estimated life-cycle costs of the
21 batteries compared to other energy storage devices
22 currently used;

23 (ii) the contribution, if any, of State or local
24 governments and other persons to the demonstration
25 project;



1 (iii) the type of associated equipment and sup-
2 porting infrastructure to be demonstrated; and

3 (iv) any other information the Secretary con-
4 siders appropriate.

5 (B) If the proposal includes a lease arrangement, the
6 proposal shall indicate the terms of such lease arrange-
7 ment for the batteries and associated equipment.

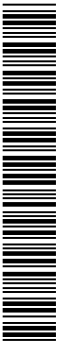
8 (c) SELECTION OF PROPOSALS.—(1)(A) The Sec-
9 retary shall, not later than 3 months after the closing date
10 established by the Secretary for receipt of proposals under
11 subsection (b), select at least 5 proposals to receive finan-
12 cial assistance under this section.

13 (B) No one project selected under this section shall
14 receive more than 25 percent of the funds authorized
15 under this section. No more than 3 projects selected under
16 this section shall demonstrate the same battery type.

17 (2) In selecting a proposal under this section, the
18 Secretary shall consider—

19 (A) the ability of the proposer to acquire the
20 batteries and associated equipment and to success-
21 fully manage and conduct the demonstration project,
22 including satisfying the reporting requirements set
23 forth in paragraph (3)(B);

24 (B) the geographic and climatic diversity of the
25 projects selected;



1 (C) the long-term technical and competitive via-
2 bility of the batteries to be used in the project and
3 of the original manufacturer of such batteries;

4 (D) the suitability of the batteries for their in-
5 tended uses;

6 (E) the technical performance of the batteries,
7 including the expected additional useful life and the
8 batteries' ability to retain energy;

9 (F) the environmental effects of the use of and
10 disposal of the batteries proposed to be used in the
11 project selected;

12 (G) the extent of involvement of State or local
13 government and other persons in the demonstration
14 project and whether such involvement will—

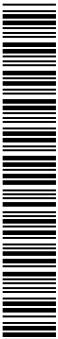
15 (i) permit a reduction of the Federal cost
16 share per project; or

17 (ii) otherwise be used to allow the Federal
18 contribution to be provided to demonstrate a
19 greater number of batteries; and

20 (H) such other criteria as the Secretary con-
21 siders appropriate.

22 (3) CONDITIONS.—The Secretary shall require that—

23 (A) as a part of a demonstration project, the
24 users of the batteries provide to the proposer infor-
25 mation regarding the operation, maintenance, per-



1 formance, and use of the batteries, and the proposer
2 provide such information to the battery manufac-
3 turer, for 3 years after the beginning of the dem-
4 onstration project;

5 (B) the proposer provide to the Secretary such
6 information regarding the operation, maintenance,
7 performance, and use of the batteries as the Sec-
8 retary may request;

9 (C) the proposer provide to the Secretary such
10 information regarding the disposal of the batteries
11 as the Secretary may require to ensure that the pro-
12 poser disposes of the batteries in accordance with
13 applicable law; and

14 (D) the proposer provide at least 50 percent of
15 the costs associated with the proposal.

16 **PART 5—ENERGY EFFICIENCY SCIENCE**
17 **INITIATIVE**

18 **SEC. 21141. ENERGY EFFICIENCY SCIENCE INITIATIVE.**

19 (a) ESTABLISHMENT.—The Secretary shall establish
20 an Energy Efficiency Science Initiative to be managed by
21 the Assistant Secretary in the Department with responsi-
22 bility for energy conservation under section 203(a)(9) of
23 the Department of Energy Organization Act (42 U.S.C.
24 7133(a)(9)), in consultation with the Director of the Of-
25 fice of Science, for grants to be competitively awarded and



1 subject to peer review for research relating to energy effi-
2 ciency.

3 (b) REPORT.—The Secretary shall submit to the Con-
4 gress, along with the President’s annual budget request
5 under section 1105(a) of title 31, United States Code, a
6 report on the activities of the Energy Efficiency Science
7 Initiative, including a description of the process used to
8 award the funds and an explanation of how the research
9 relates to energy efficiency.

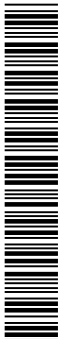
10 **PART 6—ADVANCED ENERGY TECHNOLOGY**

11 **TRANSFER CENTERS**

12 **SEC. 21151. ADVANCED ENERGY TECHNOLOGY TRANSFER**
13 **CENTERS.**

14 (a) GRANTS.—Not later than 18 months after the
15 date of the enactment of this Act, the Secretary shall
16 make grants to nonprofit institutions, State and local gov-
17 ernments, or universities (or consortia thereof), to estab-
18 lish a geographically dispersed network of Advanced En-
19 ergy Technology Transfer Centers, to be located in areas
20 the Secretary determines have the greatest need of the
21 services of such Centers.

22 (b) ACTIVITIES.—(1) Each Center shall operate a
23 program to encourage demonstration and commercial ap-
24 plication of advanced energy methods and technologies
25 through education and outreach to building and industrial



1 professionals, and to other individuals and organizations
2 with an interest in efficient energy use.

3 (2) Each Center shall establish an advisory panel to
4 advise the Center on how best to accomplish the activities
5 under paragraph (1).

6 (c) APPLICATION.—A person seeking a grant under
7 this section shall submit to the Secretary an application
8 in such form and containing such information as the Sec-
9 retary may require. The Secretary may award a grant
10 under this section to an entity already in existence if the
11 entity is otherwise eligible under this section.

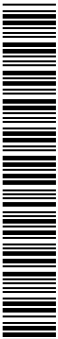
12 (d) SELECTION CRITERIA.—The Secretary shall
13 award grants under this section on the basis of the fol-
14 lowing criteria, at a minimum:

15 (1) The ability of the applicant to carry out the
16 activities in subsection (b).

17 (2) The extent to which the applicant will co-
18 ordinate the activities of the Center with other enti-
19 ties, such as State and local governments, utilities,
20 and educational and research institutions.

21 (e) MATCHING FUNDS.—The Secretary shall require
22 a non-Federal matching requirement of at least 50 percent
23 of the costs of establishing and operating each Center.

24 (f) ADVISORY COMMITTEE.—The Secretary shall es-
25 tablish an advisory committee to advise the Secretary on



1 the establishment of Centers under this section. The advi-
2 sory committee shall be composed of individuals with ex-
3 pertise in the area of advanced energy methods and tech-
4 nologies, including at least 1 representative from—

5 (1) State or local energy offices;

6 (2) energy professionals;

7 (3) trade or professional associations;

8 (4) architects, engineers, or construction profes-
9 sionals;

10 (5) manufacturers;

11 (6) the research community; and

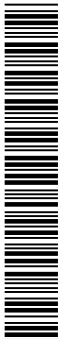
12 (7) nonprofit energy or environmental organiza-
13 tions.

14 (g) DEFINITIONS.—For purposes of this section—

15 (1) the term “advanced energy methods and
16 technologies” means all methods and technologies
17 that promote energy efficiency and conservation, in-
18 cluding distributed generation technologies, and life-
19 cycle analysis of energy use;

20 (2) the term “Center” means an Advanced En-
21 ergy Technology Transfer Center established pursu-
22 ant to this section; and

23 (3) the term “distributed generation” means an
24 electric power generation facility that is designed to



1 serve retail electric consumers at or near the facility
2 site.

3 **Subtitle B—Distributed Energy and**
4 **Electric Energy Systems**

5 **PART 1—AUTHORIZATION OF APPROPRIATIONS**

6 **SEC. 21201. DISTRIBUTED ENERGY AND ELECTRIC ENERGY**
7 **SYSTEMS.**

8 (a) IN GENERAL.—The following sums are author-
9 ized to be appropriated to the Secretary for distributed
10 energy and electric energy systems activities, including ac-
11 tivities authorized under this subtitle:

12 (1) For fiscal year 2004, \$190,000,000.

13 (2) For fiscal year 2005, \$200,000,000.

14 (3) For fiscal year 2006, \$220,000,000.

15 (4) For fiscal year 2007, \$240,000,000.

16 (b) MICRO-COGENERATION ENERGY TECH-
17 NOLOGY.—From amounts authorized under subsection

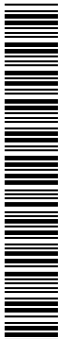
18 (a), the following sums shall be available for activities
19 under section 21213:

20 (1) For fiscal year 2004, \$5,000,000.

21 (2) For fiscal year 2005, \$5,500,000.

22 (3) For fiscal year 2006, \$6,000,000.

23 (4) For fiscal year 2007, \$6,500,000.



PART 2—DISTRIBUTED POWER**2 SEC. 21211. STRATEGY.**

(a) REQUIREMENT.—Not later than 1 year after the date of enactment of this Act, the Secretary shall develop and transmit to the Congress a strategy for a comprehensive research, development, demonstration, and commercial application program to develop hybrid distributed power systems that combine—

(1) one or more renewable electric power generation technologies of 10 megawatts or less located near the site of electric energy use; and

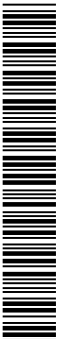
(2) nonintermittent electric power generation technologies suitable for use in a distributed power system.

(b) CONTENTS.—The strategy shall—

(1) identify the needs best met with such hybrid distributed power systems and the technological barriers to the use of such systems;

(2) provide for the development of methods to design, test, integrate into systems, and operate such hybrid distributed power systems;

(3) include, as appropriate, research, development, demonstration, and commercial application on related technologies needed for the adoption of such hybrid distributed power systems, including energy



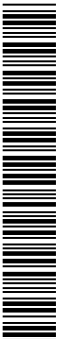
1 storage devices and environmental control tech-
2 nologies;

3 (4) include research, development, demonstra-
4 tion, and commercial application of interconnection
5 technologies for communications and controls of dis-
6 tributed generation architectures, particularly tech-
7 nologies promoting real-time response to power mar-
8 ket information and physical conditions on the elec-
9 trical grid; and

10 (5) describe how activities under the strategy
11 will be integrated with other research, development,
12 demonstration, and commercial application activities
13 supported by the Department of Energy related to
14 electric power technologies.

15 **SEC. 21212. HIGH POWER DENSITY INDUSTRY PROGRAM.**

16 The Secretary shall establish a comprehensive re-
17 search, development, demonstration, and commercial ap-
18 plication program to improve energy efficiency of high
19 power density facilities, including data centers, server
20 farms, and telecommunications facilities. Such program
21 shall consider technologies that provide significant im-
22 provement in thermal controls, metering, load manage-
23 ment, peak load reduction, or the efficient cooling of elec-
24 tronics.



1 **SEC. 21213. MICRO-COGENERATION ENERGY TECHNOLOGY.**

2 The Secretary shall make competitive, merit-based
3 grants to consortia for the development of micro-cogenera-
4 tion energy technology. The consortia shall explore the use
5 of small-scale combined heat and power in residential
6 heating appliances.

7 **PART 3—TRANSMISSION SYSTEMS**

8 **SEC. 21221. TRANSMISSION INFRASTRUCTURE SYSTEMS RE-**
9 **SEARCH, DEVELOPMENT, DEMONSTRATION,**
10 **AND COMMERCIAL APPLICATION.**

11 (a) PROGRAM AUTHORIZED.—The Secretary shall de-
12 velop and implement a comprehensive research, develop-
13 ment, demonstration, and commercial application program
14 to promote improved reliability and efficiency of electrical
15 transmission systems. Such program may include—

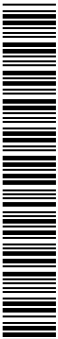
16 (1) advanced energy technologies, materials,
17 and systems;

18 (2) advanced grid reliability and efficiency tech-
19 nology development;

20 (3) technologies contributing to significant load
21 reductions;

22 (4) advanced metering, load management, and
23 control technologies;

24 (5) technologies to enhance existing grid compo-
25 nents;



1 (6) the development and use of high-tempera-
2 ture superconductors to—

3 (A) enhance the reliability, operational
4 flexibility, or power-carrying capability of elec-
5 tric transmission or distribution systems; or

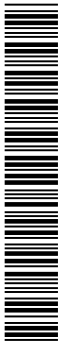
6 (B) increase the efficiency of electric en-
7 ergy generation, transmission, distribution, or
8 storage systems;

9 (7) integration of power systems, including sys-
10 tems to deliver high-quality electric power, electric
11 power reliability, and combined heat and power;

12 (8) any other infrastructure technologies, as ap-
13 propriate; and

14 (9) technology transfer and education.

15 (b) PROGRAM PLAN.—Not later than 1 year after the
16 date of the enactment of this Act, the Secretary, in con-
17 sultation with other appropriate Federal agencies, shall
18 prepare and transmit to Congress a 5-year program plan
19 to guide activities under this section. In preparing the pro-
20 gram plan, the Secretary shall consult with utilities, en-
21 ergy services providers, manufacturers, institutions of
22 higher education, other appropriate State and local agen-
23 cies, environmental organizations, professional and tech-
24 nical societies, and any other persons the Secretary con-
25 siders appropriate.



1 (c) REPORT.—Not later than 2 years after the trans-
2 mittal of the plan under subsection (b), the Secretary shall
3 transmit a report to Congress describing the progress
4 made under this section and identifying any additional re-
5 sources needed to continue the development and commer-
6 cial application of transmission infrastructure tech-
7 nologies.

8 **Subtitle C—Renewable Energy**

9 **PART 1—AUTHORIZATION OF APPROPRIATIONS**

10 **SEC. 21301. RENEWABLE ENERGY.**

11 (a) IN GENERAL.—The following sums are author-
12 ized to be appropriated to the Secretary for renewable en-
13 ergy research, development, demonstration, and commer-
14 cial application activities, including activities authorized
15 under this subtitle:

16 (1) For fiscal year 2004, \$380,000,000.

17 (2) For fiscal year 2005, \$420,000,000.

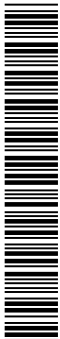
18 (3) For fiscal year 2006, \$460,000,000.

19 (4) For fiscal year 2007, \$499,000,000.

20 (b) BIOENERGY.—From the amounts authorized
21 under subsection (a), the following sums are authorized
22 to be appropriated to carry out section 21311 and section
23 21706:

24 (1) For fiscal year 2004, \$135,425,000.

25 (2) For fiscal year 2005, \$155,600,000.



1 (3) For fiscal year 2006, \$167,650,000.

2 (4) For fiscal year 2007, \$180,000,000.

3 (c) PUBLIC BUILDINGS.—From the amounts author-
4 ized under subsection (a), \$30,000,000 for each of the fis-
5 cal years 2004 through 2007 are authorized to be appro-
6 priated to carry out section 21322.

7 (d) LIMITS ON USE OF FUNDS.—

8 (1) EXCLUSION.—None of the funds authorized
9 to be appropriated under this section may be used
10 for Renewable Support and Implementation.

11 (2) BIOENERGY.—Of the funds authorized
12 under subsection (b), not less than \$5,000,000 for
13 each fiscal year shall be made available for grants to
14 Historically Black Colleges and Universities, Tribal
15 Colleges, and Hispanic-Serving Institutions.

16 (3) RURAL AND REMOTE LOCATIONS.—In car-
17 rying out this section, the Secretary, in consultation
18 with the Secretary of Agriculture, shall demonstrate
19 the use of advanced wind power technology, biomass,
20 geothermal energy systems, and other renewable en-
21 ergy technologies to assist in delivering electricity to
22 rural and remote locations.

23 (4) REGIONAL FIELD VERIFICATION.—Of the
24 funds authorized under subsection (a), not less than
25 \$4,000,000 for each fiscal year shall be made avail-



1 able for the Regional Field Verification Program of
2 the Department.

3 (5) HYDROPOWER DEMONSTRATION
4 PROJECTS.—Of the funds authorized under sub-
5 section (a), such sums as may be necessary shall be
6 made available for demonstration projects of off-
7 stream pumped storage hydropower.

8 **PART 2—BIOENERGY**

9 **SEC. 21311. BIOENERGY PROGRAMS.**

10 The Secretary shall conduct a program of research,
11 development, demonstration, and commercial application
12 for bioenergy, including—

13 (1) biopower energy systems;

14 (2) biofuels;

15 (3) integrated applications of both biopower and
16 biofuels;

17 (4) cross-cutting research and development in
18 feedstocks; and

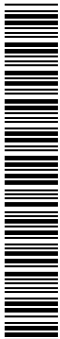
19 (5) economic analysis.

20 **PART 3—MISCELLANEOUS PROJECTS**

21 **SEC. 21321. MISCELLANEOUS PROJECTS.**

22 (a) PROGRAMS.—The Secretary shall conduct re-
23 search, development, demonstration, and commercial ap-
24 plication programs for—

25 (1) ocean energy, including wave energy;



1 (2) the combined use of renewable energy tech-
2 nologies with one another and with other energy
3 technologies, including the combined use of wind
4 power and coal gasification technologies; and

5 (3) hydrogen carrier fuels.

6 (b) STUDY.—(1) The Secretary shall enter into an
7 arrangement with the National Academy of Sciences to
8 conduct a study on—

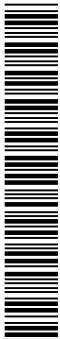
9 (A) the feasibility of various methods of renew-
10 able generation of energy from the ocean, including
11 energy from waves, tides, currents, and thermal gra-
12 dients; and

13 (B) the research, development, demonstration,
14 and commercial application activities required to
15 make marine renewable energy generation competi-
16 tive with other forms of electricity generation.

17 (2) Not later than 1 year after the date of the enact-
18 ment of this Act, the Secretary shall transmit the study
19 to the Congress along with the Secretary's recommenda-
20 tions for implementing the results of the study.

21 **SEC. 21322. RENEWABLE ENERGY IN PUBLIC BUILDINGS.**

22 (a) DEMONSTRATION AND TECHNOLOGY TRANSFER
23 PROGRAM.—The Secretary shall establish a program for
24 the demonstration of innovative technologies for solar and
25 other renewable energy sources in buildings owned or op-



1 erated by a State or local government, and for the dissemi-
2 nation of information resulting from such demonstration
3 to interested parties.

4 (b) LIMIT ON FEDERAL FUNDING.—The Secretary
5 shall provide under this section no more than 40 percent
6 of the incremental costs of the solar or other renewable
7 energy source project funded.

8 (c) REQUIREMENT.—As part of the application for
9 awards under this section, the Secretary shall require all
10 applicants—

11 (1) to demonstrate a continuing commitment to
12 the use of solar and other renewable energy sources
13 in buildings they own or operate; and

14 (2) to state how they expect any award to fur-
15 ther their transition to the significant use of renew-
16 able energy.

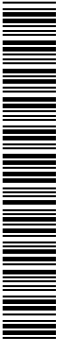
17 **Subtitle D—Nuclear Energy**

18 **PART 1—AUTHORIZATION OF APPROPRIATIONS**

19 **SEC. 21401. NUCLEAR ENERGY.**

20 (a) IN GENERAL.—The following sums are author-
21 ized to be appropriated to the Secretary for nuclear energy
22 research, development, demonstration, and commercial ap-
23 plication activities, including activities authorized under
24 this subtitle:

25 (1) For fiscal year 2004, \$388,000,000.



1 (2) For fiscal year 2005, \$416,000,000.

2 (3) For fiscal year 2006, \$445,000,000.

3 (4) For fiscal year 2007, \$474,000,000.

4 (b) ALLOCATIONS.—From amounts authorized under
5 subsection (a), the following sums are authorized:

6 (1) NUCLEAR INFRASTRUCTURE SUPPORT.—

7 For activities under section 21411(e)—

8 (A) for fiscal year 2004, \$125,000,000;

9 (B) for fiscal year 2005, \$130,000,000;

10 (C) for fiscal year 2006, \$135,000,000;

11 and

12 (D) for fiscal year 2007, \$140,000,000.

13 (2) ADVANCED FUEL RECYCLING PROGRAM.—

14 For activities under section 21421—

15 (A) for fiscal year 2004, \$80,000,000;

16 (B) for fiscal year 2005, \$93,000,000;

17 (C) for fiscal year 2006, \$106,000,000;

18 and

19 (D) for fiscal year 2007, \$120,000,000.

20 (3) UNIVERSITY PROGRAMS.—For activities

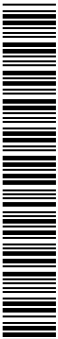
21 under section 21431—

22 (A) for fiscal year 2004, \$35,200,000, of

23 which—

24 (i) \$3,000,000 shall be for activities

25 under subsection (b)(1) of that section;



1 (ii) \$4,275,000 shall be for activities
2 under subsection (b)(2) of that section;

3 (iii) \$8,000,000 shall be for activities
4 under subsection (b)(3) of that section;

5 (iv) \$500,000 shall be for activities
6 under subsection (b)(5) of that section;

7 (v) \$7,000,000 shall be for activities
8 under subsection (c)(1) of that section;

9 (vi) \$700,000 shall be for activities
10 under subsection (c)(2) of that section;

11 (vii) \$10,000,000 shall be for activi-
12 ties under subsection (c)(3) of that section;

13 (viii) \$1,000,000 shall be for activities
14 under subsection (d)(1) of that section;

15 and

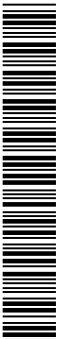
16 (ix) \$725,000 shall be for activities
17 under subsection (d)(2) of that section;

18 (B) for fiscal year 2005, \$44,350,000, of
19 which—

20 (i) \$3,100,000 shall be for activities
21 under subsection (b)(1) of that section;

22 (ii) \$6,275,000 shall be for activities
23 under subsection (b)(2) of that section;

24 (iii) \$12,000,000 shall be for activities
25 under subsection (b)(3) of that section;



1 (iv) \$550,000 shall be for activities
2 under subsection (b)(5) of that section;

3 (v) \$7,500,000 shall be for activities
4 under subsection (c)(1) of that section;

5 (vi) \$1,100,000 shall be for activities
6 under subsection (c)(2) of that section;

7 (vii) \$12,000,000 shall be for activi-
8 ties under subsection (c)(3) of that section;

9 (viii) \$1,100,000 shall be for activities
10 under subsection (d)(1) of that section;

11 and

12 (ix) \$725,000 shall be for activities
13 under subsection (d)(2) of that section;

14 (C) for fiscal year 2006, \$49,200,000, of
15 which—

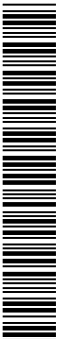
16 (i) \$3,200,000 shall be for activities
17 under subsection (b)(1) of that section;

18 (ii) \$7,150,000 shall be for activities
19 under subsection (b)(2) of that section;

20 (iii) \$13,000,000 shall be for activities
21 under subsection (b)(3) of that section;

22 (iv) \$600,000 shall be for activities
23 under subsection (b)(5) of that section;

24 (v) \$8,000,000 shall be for activities
25 under subsection (c)(1) of that section;



1 (vi) \$1,200,000 shall be for activities
2 under subsection (c)(2) of that section;

3 (vii) \$14,000,000 shall be for activi-
4 ties under subsection (c)(3) of that section;

5 (viii) \$1,200,000 shall be for activities
6 under subsection (d)(1) of that section;

7 and

8 (ix) \$850,000 shall be for activities
9 under subsection (d)(2) of that section;

10 and

11 (D) for fiscal year 2007, \$54,950,000, of
12 which—

13 (i) \$3,200,000 shall be for activities
14 under subsection (b)(1) of that section;

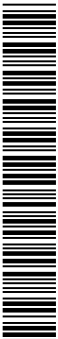
15 (ii) \$8,150,000 shall be for activities
16 under subsection (b)(2) of that section;

17 (iii) \$15,000,000 shall be for activities
18 under subsection (b)(3) of that section;

19 (iv) \$650,000 shall be for activities
20 under subsection (b)(5) of that section;

21 (v) \$8,500,000 shall be for activities
22 under subsection (c)(1); of that section;

23 (vi) \$1,300,000 shall be for activities
24 under subsection (c)(2) of that section;



- 1 (vii) \$16,000,000 shall be for activi-
2 ties under subsection (c)(3) of that section;
3 (viii) \$1,300,000 shall be for activities
4 under subsection (d)(1) of that section;
5 and
6 (ix) \$850,000 shall be for activities
7 under subsection (d)(2) of that section.

8 (c) LIMIT ON USE OF FUNDS.—None of the funds
9 authorized under this section may be used for decommis-
10 sioning the Fast Flux Test Facility.

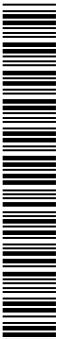
11 **PART 2—NUCLEAR ENERGY RESEARCH**
12 **PROGRAMS**

13 **SEC. 21411. NUCLEAR ENERGY RESEARCH PROGRAMS.**

14 (a) NUCLEAR ENERGY RESEARCH INITIATIVE.—The
15 Secretary shall carry out a Nuclear Energy Research Ini-
16 tiative for research and development related to nuclear en-
17 ergy.

18 (b) NUCLEAR ENERGY PLANT OPTIMIZATION PRO-
19 GRAM.—The Secretary shall carry out a Nuclear Energy
20 Plant Optimization Program to support research and de-
21 velopment activities addressing reliability, availability, pro-
22 ductivity, and component aging in existing nuclear power
23 plants.

24 (c) NUCLEAR POWER 2010 PROGRAM.—The Sec-
25 retary shall carry out a Nuclear Power 2010 Program,



1 consistent with recommendations in the October 2001 re-
2 port entitled “A Roadmap to Deploy New Nuclear Power
3 Plants in the United States by 2010” issued by the Nu-
4 clear Energy Research Advisory Committee of the Depart-
5 ment. The Program shall—

6 (1) rely on the expertise and capabilities of the
7 National Laboratories in the areas of advanced nu-
8 clear fuels cycles and fuels testing;

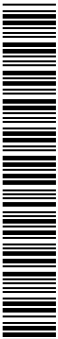
9 (2) pursue an approach that considers a variety
10 of reactor designs;

11 (3) include participation of international col-
12 laborators in research, development, and design ef-
13 forts as appropriate; and

14 (4) encourage industry participation.

15 (d) GENERATION IV NUCLEAR ENERGY SYSTEMS
16 INITIATIVE.—The Secretary shall carry out a Generation
17 IV Nuclear Energy Systems Initiative to develop an over-
18 all technology plan and to support research and develop-
19 ment necessary to make an informed technical decision
20 about the most promising candidates for eventual commer-
21 cial application. The Initiative shall examine advanced
22 proliferation-resistant and passively safe reactor designs,
23 including designs that—

24 (1) are economically competitive with other elec-
25 tric power generation plants;



1 (2) have higher efficiency, lower cost, and im-
2 proved safety compared to reactors in operation on
3 the date of enactment of this Act;

4 (3) use fuels that are proliferation resistant and
5 have substantially reduced production of high-level
6 waste per unit of output; and

7 (4) utilize improved instrumentation.

8 (e) NUCLEAR INFRASTRUCTURE SUPPORT.—The
9 Secretary shall develop and implement a strategy for the
10 facilities of the Office of Nuclear Energy, Science, and
11 Technology and shall transmit a report containing the
12 strategy along with the President's budget request to the
13 Congress for fiscal year 2005. Such strategy shall provide
14 a cost-effective means for—

15 (1) maintaining existing facilities and infra-
16 structure, as needed;

17 (2) closing unneeded facilities;

18 (3) making facility upgrades and modifications;

19 and

20 (4) building new facilities.

21 **PART 3—ADVANCED FUEL RECYCLING**

22 **SEC. 21421. ADVANCED FUEL RECYCLING PROGRAM.**

23 (a) IN GENERAL.—The Secretary, through the Direc-
24 tor of the Office of Nuclear Energy, Science and Tech-
25 nology, shall conduct an advanced fuel recycling tech-



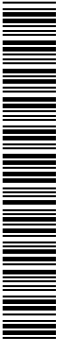
1 nology research and development program to evaluate pro-
2 liferation-resistant fuel recycling and transmutation tech-
3 nologies which minimize environmental or public health
4 and safety impacts as an alternative to aqueous reprocess-
5 ing technologies deployed as of the date of enactment of
6 this Act in support of evaluation of alternative national
7 strategies for spent nuclear fuel and the Generation IV
8 advanced reactor concepts, subject to annual review by the
9 Secretary's Nuclear Energy Research Advisory Committee
10 or other independent entity, as appropriate. Opportunities
11 to enhance progress of this program through international
12 cooperation should be sought.

13 (b) REPORTS.—The Secretary shall report on the ac-
14 tivities of the advanced fuel recycling technology research
15 and development program, as part of the Department's
16 annual budget submission.

17 **PART 4—UNIVERSITY PROGRAMS**

18 **SEC. 21431. UNIVERSITY NUCLEAR SCIENCE AND ENGI-**
19 **NEERING SUPPORT.**

20 (a) ESTABLISHMENT.—The Secretary shall support
21 a program to invest in human resources and infrastructure
22 in the nuclear sciences and engineering and related fields
23 (including health physics and nuclear and radiochemistry),
24 consistent with departmental missions related to civilian
25 nuclear research and development.



1 (b) DUTIES.—In carrying out the program under this
2 section, the Secretary shall—

3 (1) establish a graduate and undergraduate fel-
4 lowship program to attract new and talented stu-
5 dents;

6 (2) establish a Junior Faculty Research Initi-
7 ation Grant Program to assist institutions of higher
8 education in recruiting and retaining new faculty in
9 the nuclear sciences and engineering;

10 (3) support fundamental nuclear sciences and
11 engineering research through the Nuclear Engineer-
12 ing Education Research Program;

13 (4) encourage collaborative nuclear research
14 among industry, National Laboratories, and institu-
15 tions of higher education through the Nuclear En-
16 ergy Research Initiative; and

17 (5) support communication and outreach re-
18 lated to nuclear science and engineering.

19 (c) STRENGTHENING UNIVERSITY RESEARCH AND
20 TRAINING REACTORS AND ASSOCIATED INFRASTRUC-
21 TURE.—Activities under this section may include—

22 (1) converting research reactors currently using
23 high-enrichment fuels to low-enrichment fuels, up-
24 grading operational instrumentation, and sharing of
25 reactors among institutions of higher education;



1 (2) providing technical assistance, in collabora-
2 tion with the United States nuclear industry, in reli-
3 censing and upgrading training reactors as part of
4 a student training program; and

5 (3) providing funding, through the Innovations
6 in Nuclear Infrastructure and Education Program,
7 for reactor improvements as part of a focused effort
8 that emphasizes research, training, and education.

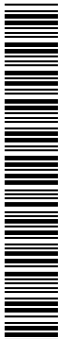
9 (d) UNIVERSITY-NATIONAL LABORATORY INTER-
10 ACTIONS.—The Secretary shall develop—

11 (1) a sabbatical fellowship program for profes-
12 sors at institutions of higher education to spend ex-
13 tended periods of time at National Laboratories in
14 the areas of nuclear science and technology; and

15 (2) a visiting scientist program in which Na-
16 tional Laboratory staff can spend time in academic
17 nuclear science and engineering departments.

18 The Secretary may provide fellowships for students to
19 spend time at National Laboratories in the area of nuclear
20 science with a member of the Laboratory staff acting as
21 a mentor.

22 (e) OPERATING AND MAINTENANCE COSTS.—Fund-
23 ing for a research project provided under this section may
24 be used to offset a portion of the operating and mainte-



1 nance costs of a research reactor at an institution of high-
2 er education used in the research project.

3 **PART 5—GEOLOGICAL ISOLATION OF SPENT**

4 **FUEL**

5 **SEC. 21441. GEOLOGICAL ISOLATION OF SPENT FUEL.**

6 The Secretary shall conduct a study to determine the
7 feasibility of deep borehole disposal of spent nuclear fuel
8 and high-level radioactive waste. The study shall empha-
9 size geological, chemical, and hydrological characterization
10 of, and design of engineered structures for, deep borehole
11 environments. Not later than 1 year after the date of en-
12 actment of this Act, the Secretary shall transmit the study
13 to the Congress.

14 **Subtitle E—Fossil Energy**

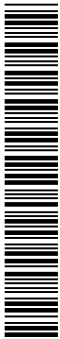
15 **PART 1—AUTHORIZATION OF APPROPRIATIONS**

16 **SEC. 21501. FOSSIL ENERGY.**

17 (a) IN GENERAL.—The following sums are author-
18 ized to be appropriated to the Secretary for fossil energy
19 research, development, demonstration, and commercial ap-
20 plication activities, other than those described in sub-
21 section (b), including activities authorized under this sub-
22 title but not including activities authorized under division
23 E:

24 (1) For fiscal year 2004, \$530,000,000.

25 (2) For fiscal year 2005, \$556,000,000.



1 (3) For fiscal year 2006, \$583,000,000.

2 (4) For fiscal year 2007, \$611,000,000.

3 No less than 60 percent of the amount appropriated for
4 each fiscal year under this subsection shall be available
5 for activities related to the coal research program under
6 section 21511(a).

7 (b) ULTRA-DEEPWATER AND UNCONVENTIONAL RE-
8 SOURCES.—

9 (1) OIL AND GAS LEASE INCOME.—For each of
10 fiscal years 2004 through 2010, from any royalties,
11 rents, and bonuses derived from Federal onshore
12 and offshore oil and gas leases issued under the
13 Outer Continental Shelf Lands Act and the Mineral
14 Leasing Act which are deposited in the Treasury,
15 and after distribution of any such funds as described
16 in paragraph (2), an amount equal to 7.5 percent of
17 the amount of royalties, rents, and bonuses derived
18 from those leases deposited in the Treasury shall be
19 deposited into the Ultra-Deepwater and Unconven-
20 tional Natural Gas and Other Petroleum Research
21 Fund (in this subsection referred to as the Fund).
22 For purposes of this subsection, the term “royalties”
23 excludes proceeds from the sale of royalty production
24 taken in kind and royalty production that is trans-
25 ferred under section 27(a)(3) of the Outer Conti-



1 nental Shelf Lands Act (43 U.S.C. 1353(a)(3)).
2 Monies in the Fund shall be available to the Sec-
3 retary for obligation under part 3, without fiscal
4 year limitation, to the extent provided in advance in
5 appropriations Acts.

6 (2) PRIOR DISTRIBUTIONS.—The distributions
7 described in paragraph (1) are those required by
8 law—

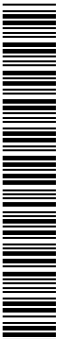
9 (A) to States and to the Reclamation Fund
10 under the Mineral Leasing Act (30 U.S.C.
11 191(a)); and

12 (B) to other funds receiving monies from
13 Federal oil and gas leasing programs,
14 including—

15 (i) any recipients pursuant to section
16 8(g) of the Outer Continental Shelf Lands
17 Act (43 U.S.C. 1337(g));

18 (ii) the Land and Water Conservation
19 Fund, pursuant to section 2(c) of the Land
20 and Water Conservation Fund Act of 1965
21 (16 U.S.C. 4601–5(c)); and

22 (iii) the Historic Preservation Fund,
23 pursuant to section 108 of the National
24 Historic Preservation Act (16 U.S.C.
25 470h).



1 (3) ALLOCATION.—Amounts made available
2 under this subsection in each fiscal year shall be al-
3 located as follows:

4 (A) 67.5 percent shall be for ultra-deep-
5 water natural gas and other petroleum activities
6 under section 21522;

7 (B) 22.5 percent shall be for unconven-
8 tional natural gas and other petroleum resource
9 activities under section 21523; and

10 (C) 10 percent shall be for research com-
11 plementary to research under section
12 21521(b)(1) through (3).

13 (c) ALLOCATIONS.—From amounts authorized under
14 subsection (a), the following sums are authorized:

15 (1) FUEL CELL PROTON EXCHANGE MEMBRANE
16 TECHNOLOGY.—For activities under section
17 21511(c)(2), \$28,000,000 for each of the fiscal
18 years 2004 through 2007.

19 (2) COAL MINING TECHNOLOGIES.—For activi-
20 ties under section 21512—

21 (A) for fiscal year 2004, \$12,000,000; and

22 (B) for fiscal year 2005, \$15,000,000.

23 (3) OFFICE OF ARCTIC ENERGY.—For the Of-
24 fice of Arctic Energy under section 3197 of the
25 Floyd D. Spence National Defense Authorization



1 Act for Fiscal Year 2001 (Public Law 106–398),
2 \$25,000,000 for each of fiscal years 2004 through
3 2007.

4 (d) EXTENDED AUTHORIZATION.—There are author-
5 ized to be appropriated to the Secretary for the Office of
6 Arctic Energy under section 3197 of the Floyd D. Spence
7 National Defense Authorization Act for Fiscal Year 2001
8 (Public Law 106–398), \$25,000,000 for each of fiscal
9 years 2008 through 2011.

10 (e) LIMITS ON USE OF FUNDS.—

11 (1) EXCLUSIONS.—None of the funds author-
12 ized under this section may be used for—

13 (A) Fossil Energy Environmental Restora-
14 tion; or

15 (B) Import/Export Authorization.

16 (2) UNIVERSITY COAL MINING RESEARCH.—Of
17 the funds authorized under subsection (c)(2), not
18 less than 20 percent of the funds appropriated for
19 each fiscal year shall be dedicated to research and
20 development carried out at institutions of higher
21 education.

22 **PART 2—RESEARCH PROGRAMS**

23 **SEC. 21511. FOSSIL ENERGY RESEARCH PROGRAMS.**

24 (a) COAL RESEARCH.—(1) In addition to the Clean
25 Coal Power Initiative authorized under division E, the



1 Secretary shall conduct a program of research, develop-
2 ment, demonstration, and commercial application for coal
3 and power systems, including—

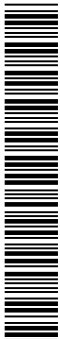
- 4 (A) central systems;
- 5 (B) sequestration research and development;
- 6 (C) fuels;
- 7 (D) advanced research; and
- 8 (E) advanced separation technologies.

9 (2) Not later than 6 months after the date of enact-
10 ment of this Act, the Secretary shall transmit to the Con-
11 gress a report providing—

- 12 (A) a detailed description of how proposals will
13 be solicited and evaluated;
- 14 (B) a list of activities and technical milestones;
15 and
- 16 (C) a description of how these activities will
17 complement and not duplicate the Clean Coal Power
18 Initiative authorized under division E.

19 (b) OIL AND GAS RESEARCH.—The Secretary shall
20 conduct a program of research, development, demonstra-
21 tion, and commercial application on oil and gas,
22 including—

- 23 (1) exploration and production;
- 24 (2) gas hydrates;
- 25 (3) reservoir life and extension;



1 (4) transportation and distribution infrastruc-
2 ture;

3 (5) ultraclean fuels;

4 (6) heavy oil and oil shale; and

5 (7) environmental research.

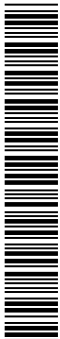
6 (c) FUEL CELLS.—(1) The Secretary shall conduct
7 a program of research, development, demonstration, and
8 commercial application on fuel cells for low-cost, high-effi-
9 ciency, fuel-flexible, modular power systems.

10 (2) The demonstrations shall include fuel cell proton
11 exchange membrane technology for commercial, residen-
12 tial, and transportation applications, and distributed gen-
13 eration systems, utilizing improved manufacturing produc-
14 tion and processes.

15 (d) TECHNOLOGY TRANSFER.—To the maximum ex-
16 tent practicable, existing technology transfer mechanisms
17 shall be used to implement oil and gas exploration and
18 production technology transfer programs.

19 **SEC. 21512. RESEARCH AND DEVELOPMENT FOR COAL MIN-**
20 **ING TECHNOLOGIES.**

21 (a) ESTABLISHMENT.—The Secretary shall carry out
22 a program of research and development on coal mining
23 technologies. The Secretary shall cooperate with appro-
24 priate Federal agencies, coal producers, trade associations,
25 equipment manufacturers, institutions of higher education



1 with mining engineering departments, and other relevant
2 entities.

3 (b) PROGRAM.—The research and development activi-
4 ties carried out under this section shall—

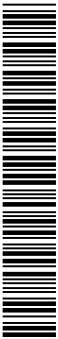
- 5 (1) be based on the mining research and devel-
6 opment priorities identified by the Mining Industry
7 of the Future Program and in the recommendations
8 from relevant reports of the National Academy of
9 Sciences on mining technologies; and
10 (2) expand mining research capabilities at insti-
11 tutions of higher education.

12 **PART 3—ULTRA-DEEPWATER AND UNCONVEN-**
13 **TIONAL NATURAL GAS AND OTHER PETRO-**
14 **LEUM RESOURCES**

15 **SEC. 21521. PROGRAM AUTHORITY.**

16 (a) IN GENERAL.—The Secretary shall carry out a
17 program under this part of research, development, dem-
18 onstration, and commercial application of technologies for
19 ultra-deepwater and unconventional natural gas and other
20 petroleum resource exploration and production, including
21 safe operations and environmental mitigation (including
22 reduction of greenhouse gas emissions and sequestration
23 of carbon).

24 (b) PROGRAM ELEMENTS.—The program under this
25 part shall address the following areas, including improving



1 safety and minimizing environmental impacts of activities
2 within each area:

3 (1) Ultra-deepwater technology.

4 (2) Ultra-deepwater architecture.

5 (3) Unconventional natural gas and other petro-
6 leum resource exploration and production tech-
7 nology.

8 (c) LIMITATION ON LOCATION OF FIELD ACTIVI-
9 TIES.—Field activities under the program under this part
10 shall be carried out only—

11 (1) in—

12 (A) areas in the territorial waters of the
13 United States not under any Outer Continental
14 Shelf moratorium as of September 30, 2002;

15 (B) areas onshore in the United States on
16 public land administered by the Secretary of the
17 Interior available for oil and gas leasing, where
18 consistent with applicable law and land use
19 plans; and

20 (C) areas onshore in the United States on
21 State or private land, subject to applicable law;
22 and

23 (2) with the approval of the appropriate Fed-
24 eral or State land management agency or private
25 land owner.



1 (d) RESEARCH AT NATIONAL ENERGY TECHNOLOGY
2 LABORATORY.—The Secretary, through the National En-
3 ergy Technology Laboratory, shall carry out research com-
4 plementary to research under subsection (b).

5 (e) CONSULTATION WITH SECRETARY OF THE INTE-
6 RIOR.—In carrying out this part, the Secretary shall con-
7 sult regularly with the Secretary of the Interior.

8 **SEC. 21522. ULTRA-DEEPWATER PROGRAM.**

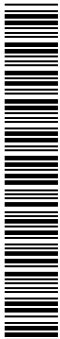
9 (a) IN GENERAL.—The Secretary shall carry out the
10 activities under paragraphs (1) and (2) of section
11 21521(b), to maximize the value of the ultra-deepwater
12 natural gas and other petroleum resources of the United
13 States by increasing the supply of such resources and by
14 reducing the cost and increasing the efficiency of explo-
15 ration for and production of such resources, while improv-
16 ing safety and minimizing environmental impacts.

17 (b) ROLE OF THE SECRETARY.—The Secretary shall
18 have ultimate responsibility for, and oversight of, all as-
19 pects of the program under this section.

20 (c) ROLE OF THE PROGRAM CONSORTIUM.—

21 (1) IN GENERAL.—The Secretary shall contract
22 with a consortium to—

23 (A) manage awards pursuant to subsection
24 (f)(4);



1 (B) make recommendations to the Sec-
2 retary for project solicitations;

3 (C) disburse funds awarded under sub-
4 section (f) as directed by the Secretary in ac-
5 cordance with the annual plan under subsection
6 (e); and

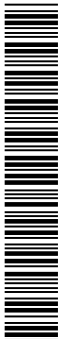
7 (D) carry out other activities assigned to
8 the program consortium by this section.

9 (2) LIMITATION.—The Secretary may not as-
10 sign any activities to the program consortium except
11 as specifically authorized under this section.

12 (3) CONFLICT OF INTEREST.—(A) The Sec-
13 retary shall establish procedures—

14 (i) to ensure that each board member, offi-
15 cer, or employee of the program consortium
16 who is in a decisionmaking capacity under sub-
17 section (f)(3) or (4) shall disclose to the Sec-
18 retary any financial interests in, or financial re-
19 lationships with, applicants for or recipients of
20 awards under this section, including those of
21 his or her spouse or minor child, unless such re-
22 lationships or interests would be considered to
23 be remote or inconsequential; and

24 (ii) to require any board member, officer,
25 or employee with a financial relationship or in-



1 terest disclosed under clause (i) to recuse him-
2 self or herself from any review under subsection
3 (f)(3) or oversight under subsection (f)(4) with
4 respect to such applicant or recipient.

5 (B) The Secretary may disqualify an applica-
6 tion or revoke an award under this section if a board
7 member, officer, or employee has failed to comply
8 with procedures required under subparagraph
9 (A)(ii).

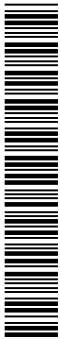
10 (d) SELECTION OF THE PROGRAM CONSORTIUM.—

11 (1) IN GENERAL.—The Secretary shall select
12 the program consortium through an open, competi-
13 tive process.

14 (2) MEMBERS.—The program consortium may
15 include corporations, institutions of higher edu-
16 cation, National Laboratories, or other research in-
17 stitutions. After submitting a proposal under para-
18 graph (4), the program consortium may not add
19 members without the consent of the Secretary.

20 (3) TAX STATUS.—The program consortium
21 shall be an entity that is exempt from tax under sec-
22 tion 501(c)(3) of the Internal Revenue Code of
23 1986.

24 (4) SCHEDULE.—Not later than 90 days after
25 the date of enactment of this Act, the Secretary



1 shall solicit proposals for the creation of the pro-
2 gram consortium, which must be submitted not less
3 than 180 days after the date of enactment of this
4 Act. The Secretary shall select the program consor-
5 tium not later than 240 days after such date of en-
6 actment.

7 (5) APPLICATION.—Applicants shall submit a
8 proposal including such information as the Secretary
9 may require. At a minimum, each proposal shall—

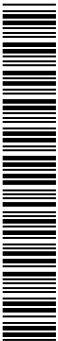
10 (A) list all members of the consortium;

11 (B) fully describe the structure of the con-
12 sortium, including any provisions relating to in-
13 tellectual property; and –

14 (C) describe how the applicant would carry
15 out the activities of the program consortium
16 under this section.

17 (6) ELIGIBILITY.—To be eligible to be selected
18 as the program consortium, an applicant must be an
19 entity whose members collectively have demonstrated
20 capabilities in planning and managing research, de-
21 velopment, demonstration, and commercial applica-
22 tion programs in natural gas or other petroleum ex-
23 ploration or production.

24 (7) CRITERION.—The Secretary may consider
25 the amount of the fee an applicant proposes to re-



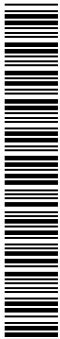
1 ceive under subsection (g) in selecting a consortium
2 under this section.

3 (e) ANNUAL PLAN.—

4 (1) IN GENERAL.—The program under this sec-
5 tion shall be carried out pursuant to an annual plan
6 prepared by the Secretary in accordance with para-
7 graph (2).

8 (2) DEVELOPMENT.—(A) Before drafting an
9 annual plan under this subsection, the Secretary
10 shall solicit specific written recommendations from
11 the program consortium for each element to be ad-
12 dressed in the plan, including those described in
13 paragraph (4). The Secretary may request that the
14 program consortium submit its recommendations in
15 the form of a draft annual plan.

16 (B) The Secretary shall submit the rec-
17 ommendations of the program consortium under
18 subparagraph (A) to the Ultra-Deepwater Advisory
19 Committee established under section 21525(a) for
20 review, and such Advisory Committee shall provide
21 to the Secretary written comments by a date deter-
22 mined by the Secretary. The Secretary may also so-
23 licit comments from any other experts.



1 (C) The Secretary shall consult regularly with
2 the program consortium throughout the preparation
3 of the annual plan.

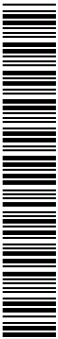
4 (3) PUBLICATION.—The Secretary shall trans-
5 mit to the Congress and publish in the Federal Reg-
6 ister the annual plan, along with any written com-
7 ments received under paragraph (2)(A) and (B).
8 The annual plan shall be transmitted and published
9 not later than 60 days after the date of enactment
10 of an Act making appropriations for a fiscal year for
11 the program under this section.

12 (4) CONTENTS.—The annual plan shall describe
13 the ongoing and prospective activities of the pro-
14 gram under this section and shall include—

15 (A) a list of any solicitations for awards
16 that the Secretary plans to issue to carry out
17 research, development, demonstration, or com-
18 mercial application activities, including the top-
19 ics for such work, who would be eligible to
20 apply, selection criteria, and the duration of
21 awards; and

22 (B) a description of the activities expected
23 of the program consortium to carry out sub-
24 section (f)(4).

25 (f) AWARDS.—

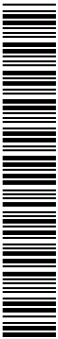


1 (1) IN GENERAL.—The Secretary shall make
2 awards to carry out research, development, dem-
3 onstration, and commercial application activities
4 under the program under this section. The program
5 consortium shall not be eligible to receive such
6 awards, but members of the program consortium
7 may receive such awards.

8 (2) PROPOSALS.—The Secretary shall solicit
9 proposals for awards under this subsection in such
10 manner and at such time as the Secretary may pre-
11 scribe, in consultation with the program consortium.

12 (3) REVIEW.—The Secretary shall make awards
13 under this subsection through a competitive process,
14 which shall include a review by individuals selected
15 by the Secretary. Such individuals shall include, for
16 each application, Federal officials, the program con-
17 sortium, and non-Federal experts who are not board
18 members, officers, or employees of the program con-
19 sortium or of a member of the program consortium.

20 (4) OVERSIGHT.—(A) The program consortium
21 shall oversee the implementation of awards under
22 this subsection, consistent with the annual plan
23 under subsection (e), including disbursing funds and
24 monitoring activities carried out under such awards



1 for compliance with the terms and conditions of the
2 awards.

3 (B) Nothing in subparagraph (A) shall limit the
4 authority or responsibility of the Secretary to over-
5 see awards, or limit the authority of the Secretary
6 to review or revoke awards.

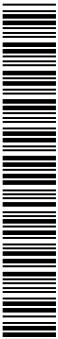
7 (C) The Secretary shall provide to the program
8 consortium the information necessary for the pro-
9 gram consortium to carry out its responsibilities
10 under this paragraph.

11 (g) FEE.—

12 (1) IN GENERAL.—To compensate the program
13 consortium for carrying out its activities under this
14 section, the Secretary shall provide to the program
15 consortium a fee in an amount not to exceed 7.5
16 percent of the amounts awarded under subsection (f)
17 for each fiscal year.

18 (2) ADVANCE.—The Secretary shall advance
19 funds to the program consortium upon selection of
20 the consortium, which shall be deducted from
21 amounts to be provided under paragraph (1).

22 (h) AUDIT.—The Secretary shall retain an inde-
23 pendent, commercial auditor to determine the extent to
24 which funds provided to the program consortium, and
25 funds provided under awards made under subsection (f),



1 have been expended in a manner consistent with the pur-
2 poses and requirements of this part. The auditor shall
3 transmit a report annually to the Secretary, who shall
4 transmit the report to Congress, along with a plan to rem-
5 edy any deficiencies cited in the report.

6 **SEC. 21523. UNCONVENTIONAL NATURAL GAS AND OTHER**
7 **PETROLEUM RESOURCES PROGRAM.**

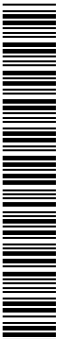
8 (a) IN GENERAL.—The Secretary shall carry out ac-
9 tivities under section 21521(b)(3), to maximize the value
10 of the onshore unconventional natural gas and other petro-
11 leum resources of the United States by increasing the sup-
12 ply of such resources and by reducing the cost and increas-
13 ing the efficiency of exploration for and production of such
14 resources, while improving safety and minimizing environ-
15 mental impacts.

16 (b) AWARDS.—

17 (1) IN GENERAL.—The Secretary shall carry
18 out this section through awards made through an
19 open, competitive process.

20 (2) CONSORTIA.—In carrying out paragraph
21 (1), the Secretary shall give preference to making
22 awards to consortia.

23 (c) AUDIT.—The Secretary shall retain an inde-
24 pendent, commercial auditor to determine the extent to
25 which funds provided under awards made under this sec-



tion have been expended in a manner consistent with the purposes and requirements of this part. The auditor shall transmit a report annually to the Secretary, who shall transmit the report to Congress, along with a plan to remedy any deficiencies cited in the report.

(d) FOCUS AREAS.—Awards under this section may focus on areas including advanced coal-bed methane, deep drilling, natural gas production from tight sands, natural gas production from gas shales, innovative exploration and production techniques, enhanced recovery techniques, and environmental mitigation of unconventional natural gas and other petroleum resources exploration and production.

(e) ACTIVITIES BY THE UNITED STATES GEOLOGICAL SURVEY.—The Secretary of the Interior, through the United States Geological Survey, shall, where appropriate, carry out programs of long-term research to complement the programs under this section.

SEC. 21524. ADDITIONAL REQUIREMENTS FOR AWARDS.

(a) DEMONSTRATION PROJECTS.—An application for an award under this part for a demonstration project shall describe with specificity the intended commercial use of the technology to be demonstrated.

(b) FLEXIBILITY IN LOCATING DEMONSTRATION PROJECTS.—Subject to the limitation in section 21521(c), a demonstration project under this part relating to an



1 ultra-deepwater technology or an ultra-deepwater architec-
2 ture may be conducted in deepwater depths.

3 (c) INTELLECTUAL PROPERTY AGREEMENTS.—If an
4 award under this part is made to a consortium (other than
5 the program consortium), the consortium shall provide to
6 the Secretary a signed contract agreed to by all members
7 of the consortium describing the rights of each member
8 to intellectual property used or developed under the award.

9 (d) TECHNOLOGY TRANSFER.—Each recipient of an
10 award under this part shall conduct technology transfer
11 activities, as appropriate, and outreach activities pursuant
12 to section 21809.

13 (e) COST-SHARING REDUCTION FOR INDEPENDENT
14 PRODUCERS.—In applying the cost-sharing requirements
15 under section 21802 to an award under this part made
16 solely to an independent producer of oil or gas, the Sec-
17 retary may reduce the applicable non-Federal requirement
18 in such section to a level not less than 10 percent of the
19 cost of the project.

20 **SEC. 21525. ADVISORY COMMITTEES.**

21 (a) ULTRA-DEEPWATER ADVISORY COMMITTEE.—

22 (1) ESTABLISHMENT.—Not later than 270 days
23 after the date of enactment of this section, the Sec-
24 retary shall establish an advisory committee to be
25 known as the Ultra-Deepwater Advisory Committee.



1 (2) MEMBERSHIP.—The advisory committee
2 under this subsection shall be composed of members
3 appointed by the Secretary and including—

4 (A) individuals with extensive research ex-
5 perience or operational knowledge of offshore
6 natural gas and other petroleum exploration
7 and production;

8 (B) individuals broadly representative of
9 the affected interests in ultra-deepwater natural
10 gas and other petroleum production, including
11 interests in environmental protection and safe
12 operations;

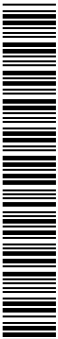
13 (C) no individuals who are Federal employ-
14 ees; and

15 (D) no individuals who are board members,
16 officers, or employees of the program consor-
17 tium.

18 (3) DUTIES.—The advisory committee under
19 this subsection shall—

20 (A) advise the Secretary on the develop-
21 ment and implementation of programs under
22 this part related to ultra-deepwater natural gas
23 and other petroleum resources; and

24 (B) carry out section 21522(e)(2)(B).



1 (4) COMPENSATION.—A member of the advi-
2 sory committee under this subsection shall serve
3 without compensation but shall receive travel ex-
4 penses, including per diem in lieu of subsistence, in
5 accordance with applicable provisions under sub-
6 chapter I of chapter 57 of title 5, United States
7 Code.

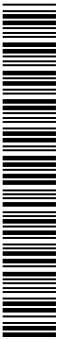
8 (b) UNCONVENTIONAL RESOURCES TECHNOLOGY
9 ADVISORY COMMITTEE.—

10 (1) ESTABLISHMENT.—Not later than 270 days
11 after the date of enactment of this section, the Sec-
12 retary shall establish an advisory committee to be
13 known as the Unconventional Resources Technology
14 Advisory Committee.

15 (2) MEMBERSHIP.—The advisory committee
16 under this subsection shall be composed of members
17 appointed by the Secretary and including—

18 (A) individuals with extensive research ex-
19 perience or operational knowledge of unconven-
20 tional natural gas and other petroleum resource
21 exploration and production, including inde-
22 pendent oil and gas producers;

23 (B) individuals broadly representative of
24 the affected interests in unconventional natural
25 gas and other petroleum resource exploration



1 and production, including interests in environ-
2 mental protection and safe operations; and

3 (C) no individuals who are Federal employ-
4 ees.

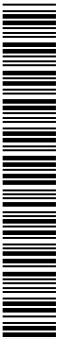
5 (3) DUTIES.—The advisory committee under
6 this subsection shall advise the Secretary on the de-
7 velopment and implementation of activities under
8 this part related to unconventional natural gas and
9 other petroleum resources.

10 (4) COMPENSATION.—A member of the advi-
11 sory committee under this subsection shall serve
12 without compensation but shall receive travel ex-
13 penses, including per diem in lieu of subsistence, in
14 accordance with applicable provisions under sub-
15 chapter I of chapter 57 of title 5, United States
16 Code.

17 (c) PROHIBITION.—No advisory committee estab-
18 lished under this section shall make recommendations on
19 funding awards to consortia or for specific projects.

20 **SEC. 21526. LIMITS ON PARTICIPATION.**

21 (a) IN GENERAL.—An entity shall be eligible to re-
22 ceive an award under this part only if the Secretary
23 finds—



1 (1) that the entity's participation in the pro-
2 gram under this part would be in the economic in-
3 terest of the United States; and

4 (2) that either—

5 (A) the entity is a United States-owned en-
6 tity organized under the laws of the United
7 States; or

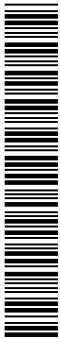
8 (B) the entity is organized under the laws
9 of the United States and has a parent entity or-
10 ganized under the laws of a country which
11 affords—

12 (i) to United States-owned entities op-
13 portunities, comparable to those afforded
14 to any other entity, to participate in any
15 cooperative research venture similar to
16 those authorized under this part;

17 (ii) to United States-owned entities
18 local investment opportunities comparable
19 to those afforded to any other entity; and

20 (iii) adequate and effective protection
21 for the intellectual property rights of
22 United States-owned entities.

23 (b) SENSE OF CONGRESS AND REPORT.—It is the
24 Sense of the Congress that ultra-deepwater technology de-
25 veloped under this part is to be developed primarily for



1 production of ultra-deepwater natural gas and other petro-
2 leum resources of the United States, and that this priority
3 is to be reflected in the terms of grants, contracts, and
4 cooperative agreements entered under this part. As part
5 of the annual Departmental budget submission, the Sec-
6 retary shall report on all steps taken to implement the pol-
7 icy described in this subsection.

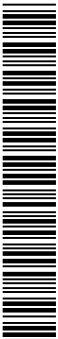
8 **SEC. 21527. FUND.**

9 There is hereby established in the Treasury of the
10 United States a separate fund to be known as the “Ultra-
11 Deepwater and Unconventional Natural Gas and Other
12 Petroleum Research Fund”.

13 **SEC. 21528. TRANSFER OF ADVANCED OIL AND GAS EXPLO-**
14 **RATION AND PRODUCTION TECHNOLOGIES.**

15 (a) ASSESSMENT.—The Secretary shall review tech-
16 nology programs throughout the Federal Government to
17 assess the suitability of technologies developed thereunder
18 for use in ultradeep drilling research, development, dem-
19 onstration, and commercial application.

20 (b) TECHNOLOGY TRANSFER.—Not later than 1 year
21 after the date of enactment of this Act, the Secretary shall
22 issue a solicitation seeking organizations knowledgeable of
23 the technology needs of the ultradeep drilling industry.
24 The Secretary shall select the most qualified applicant to
25 manage a program to transfer technologies the Secretary



1 determines suitable under subsection (a) to appropriate
2 entities. The organization selected under section 21522(d)
3 shall not be eligible for selection under this subsection.

4 (c) FUNDING.—From the funds available under sec-
5 tion 21501(b)(3)(C), \$1,000,000 shall be available to
6 carry out this section in each of the fiscal years 2004
7 through 2007.

8 **SEC. 21529. SUNSET.**

9 The authority provided by this part shall terminate
10 on September 30, 2010.

11 **SEC. 21530. DEFINITIONS.**

12 In this part:

13 (1) DEEPWATER.—The term “deepwater”
14 means a water depth that is greater than 200 but
15 less than 1,500 meters.

16 (2) PROGRAM CONSORTIUM.—The term “pro-
17 gram consortium” means the consortium selected
18 under section 21522(d).

19 (3) REMOTE OR INCONSEQUENTIAL.—The term
20 “remote or inconsequential” has the meaning given
21 that term in regulations issued by the Office of Gov-
22 ernment Ethics under section 208(b)(2) of title 18,
23 United States Code.



1 (4) ULTRA-DEEPWATER.—The term “ultra-
2 deepwater” means a water depth that is equal to or
3 greater than 1,500 meters.

4 (5) ULTRA-DEEPWATER ARCHITECTURE.—The
5 term “ultra-deepwater architecture” means the inte-
6 gration of technologies for the exploration for, or
7 production of, natural gas or other petroleum re-
8 sources located at ultra-deepwater depths.

9 (6) ULTRA-DEEPWATER TECHNOLOGY.—The
10 term “ultra-deepwater technology” means a discrete
11 technology that is specially suited to address one or
12 more challenges associated with the exploration for,
13 or production of, natural gas or other petroleum re-
14 sources located at ultra-deepwater depths.

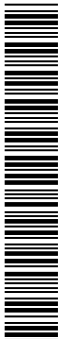
15 (7) UNCONVENTIONAL NATURAL GAS AND
16 OTHER PETROLEUM RESOURCE.—The term “uncon-
17 ventional natural gas and other petroleum resource”
18 means natural gas and other petroleum resource lo-
19 cated onshore in an economically inaccessible geo-
20 logical formation.

21 **Subtitle F—Science**

22 **PART 1—AUTHORIZATION OF APPROPRIATIONS**

23 **SEC. 21601. SCIENCE.**

24 (a) IN GENERAL.—The following sums are author-
25 ized to be appropriated to the Secretary for research, de-



1 velopment, demonstration, and commercial application ac-
2 tivities of the Office of Science, including activities author-
3 ized under this subtitle, including the amounts authorized
4 under the amendment made by section 21634(c)(2)(C),
5 and including basic energy sciences, advanced scientific
6 and computing research, biological and environmental re-
7 search, fusion energy sciences, high energy physics, nu-
8 clear physics, and research analysis and infrastructure
9 support:

10 (1) For fiscal year 2004, \$3,785,000,000.

11 (2) For fiscal year 2005, \$4,153,000,000.

12 (3) For fiscal year 2006, \$4,618,000,000.

13 (4) For fiscal year 2007, \$5,310,000,000.

14 (b) ALLOCATIONS.—From amounts authorized under
15 subsection (a), the following sums are authorized:

16 (1) FUSION ENERGY SCIENCES.—(A) For the
17 Fusion Energy Sciences Program, excluding activi-
18 ties under sections 21611 and 21612—

19 (i) for fiscal year 2004, \$276,000,000;

20 (ii) for fiscal year 2005, \$300,000,000;.

21 (iii) for fiscal year 2006, \$340,000,000;

22 and

23 (iv) for fiscal year 2007, \$350,000,000.

24 (B) For activities under section 21611 and for
25 the project described in section 21612—



- 1 (i) for fiscal year 2004, \$12,000,000;
2 (ii) for fiscal year 2005, \$20,000,000;
3 (iii) for fiscal year 2006, \$50,000,000; and
4 (iv) for fiscal year 2007, \$75,000,000.

5 (2) SPALLATION NEUTRON SOURCE.—

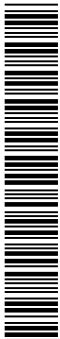
6 (A) CONSTRUCTION.—For construction of
7 the Spallation Neutron Source—

- 8 (i) for fiscal year 2004, \$124,600,000;
9 (ii) for fiscal year 2005, \$79,800,000;
10 and
11 (iii) for fiscal year 2006, \$41,100,000
12 for completion of construction.

13 (B) OTHER PROJECT FUNDING.—For
14 other project costs (including research and de-
15 velopment necessary to complete the project,
16 preoperations costs, and capital equipment re-
17 lated to construction) of the Spallation Neutron
18 Source, \$103,279,000 for the period encom-
19 passing fiscal years 2003 through 2006, to re-
20 main available until expended through Sep-
21 tember 30, 2006.

22 (3) NANOTECHNOLOGY RESEARCH AND DEVEL-
23 OPMENT.—For activities under section 21633—

- 24 (A) for fiscal year 2004, \$265,000,000;
25 (B) for fiscal year 2005, \$292,000,000;



1 (C) for fiscal year 2006, \$322,000,000;

2 and

3 (D) for fiscal year 2007, \$355,000,000.

4 (4) SCIENCE AND TECHNOLOGY SCHOLARSHIP
5 PROGRAM.—For activities under section 21636—

6 (A) for fiscal year 2004, \$800,000;

7 (B) for fiscal year 2005, \$1,600,000;

8 (C) for fiscal year 2006, \$2,000,000; and

9 (D) for fiscal year 2007, \$2,000,000.

10 (5) GENOMES TO LIFE.—For activities under
11 section 21641—

12 (A) \$100,000,000 for fiscal year 2004; and

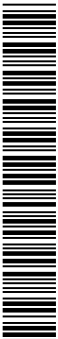
13 (B) such sums as may be necessary for fis-
14 cal years 2005 through 2007.

15 (c) LIMITS ON USE OF FUNDS.—Of the funds au-
16 thorized under subsection (b)(1), no funds shall be avail-
17 able for implementation of the plan described in section
18 21612.

19 **PART 2—FUSION ENERGY SCIENCES**

20 **SEC. 21611. ITER.**

21 (a) IN GENERAL.—The United States is authorized
22 to participate in ITER in accordance with the provisions
23 of this section.



1 (b) AGREEMENT.—(1) The Secretary is authorized to
2 negotiate an agreement for United States participation in
3 ITER.

4 (2) Any agreement for United States participation in
5 ITER shall, at a minimum—

6 (A) clearly define the United States financial
7 contribution to construction and operating costs;

8 (B) ensure that the share of ITER's high-tech-
9 nology components manufactured in the United
10 States is at least proportionate to the United States
11 financial contribution to ITER;

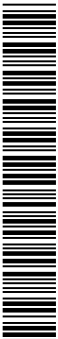
12 (C) ensure that the United States will not be fi-
13 nancially responsible for cost overruns in compo-
14 nents manufactured in other ITER participating
15 countries;

16 (D) guarantee the United States full access to
17 all data generated by ITER;

18 (E) enable United States researchers to propose
19 and carry out an equitable share of the experiments
20 at ITER;

21 (F) provide the United States with a role in all
22 collective decisionmaking related to ITER; and

23 (G) describe the process for discontinuing or
24 decommissioning ITER and any United States role
25 in those processes.



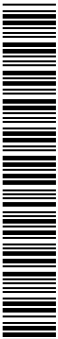
1 (c) PLAN.—The Secretary, in consultation with the
2 Fusion Energy Sciences Advisory Committee, shall de-
3 velop a plan for the participation of United States sci-
4 entists in ITER that shall include the United States re-
5 search agenda for ITER, methods to evaluate whether
6 ITER is promoting progress toward making fusion a reli-
7 able and affordable source of power, and a description of
8 how work at ITER will relate to other elements of the
9 United States fusion program. The Secretary shall request
10 a review of the plan by the National Academy of Sciences.

11 (d) LIMITATION.—No funds shall be expended for the
12 construction of ITER until the Secretary has transmitted
13 to the Congress—

14 (1) the agreement negotiated pursuant to sub-
15 section (b) and 120 days have elapsed since that
16 transmission;

17 (2) a report describing the management struc-
18 ture of ITER and providing a fixed dollar estimate
19 of the cost of United States participation in the con-
20 struction of ITER, and 120 days have elapsed since
21 that transmission;

22 (3) a report describing how United States par-
23 ticipation in ITER will be funded without reducing
24 funding for other programs in the Office of Science,



1 including other fusion programs, and 60 days have
2 elapsed since that transmission; and

3 (4) the plan required by subsection (c) (but not
4 the National Academy of Sciences review of that
5 plan), and 60 days have elapsed since that trans-
6 mission.

7 (e) DEFINITIONS.—In this section—

8 (1) the term “construction” means the physical
9 construction of the ITER facility, and the physical
10 construction, purchase, or manufacture of equipment
11 or components that are specifically designed for the
12 ITER facility, but does not mean the design of the
13 facility, equipment, or components; and

14 (2) the term “ITER” means the international
15 burning plasma fusion research project in which the
16 President announced United States participation on
17 January 30, 2003.

18 **SEC. 21612. PLAN FOR FUSION EXPERIMENT.**

19 (a) IN GENERAL.—If at any time during the negotia-
20 tions on ITER, the Secretary determines that construction
21 and operation of ITER is unlikely or infeasible, the Sec-
22 retary shall send to Congress, as part of the budget re-
23 quest for the following year, a plan for implementing the
24 domestic burning plasma experiment known as FIRE, in-
25 cluding costs and schedules for such a plan. The Secretary



1 shall refine such plan in full consultation with the Fusion
2 Energy Sciences Advisory Committee and shall also trans-
3 mit such plan to the National Academy of Sciences for
4 review.

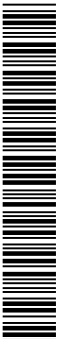
5 (b) DEFINITIONS.—As used in this section—

6 (1) the term “ITER” has the meaning given
7 that term in section 21611; and

8 (2) the term “FIRE” means the Fusion Igni-
9 tion Research Experiment, the fusion research ex-
10 periment for which design work has been supported
11 by the Department as a possible alternative burning
12 plasma experiment in the event that ITER fails to
13 move forward.

14 **SEC. 21613. PLAN FOR FUSION ENERGY SCIENCES PRO-**
15 **GRAM.**

16 (a) DECLARATION OF POLICY.—It shall be the policy
17 of the United States to conduct research, development,
18 demonstration, and commercial application to provide for
19 the scientific, engineering, and commercial infrastructure
20 necessary to ensure that the United States is competitive
21 with other nations in providing fusion energy for its own
22 needs and the needs of other nations, including by dem-
23 onstrating electric power or hydrogen production for the
24 United States energy grid utilizing fusion energy at the
25 earliest date possible.



1 (b) FUSION ENERGY PLAN.—

2 (1) IN GENERAL.—Within 6 months after the
3 date of enactment of this Act, the Secretary shall
4 transmit to Congress a plan for carrying out the pol-
5 icy set forth in subsection (a), including cost esti-
6 mates, proposed budgets, potential international
7 partners, and specific programs for implementing
8 such policy.

9 (2) REQUIREMENTS OF PLAN.—Such plan shall
10 also ensure that—

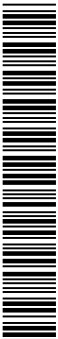
11 (A) existing fusion research facilities are
12 more fully utilized;

13 (B) fusion science, technology, theory, ad-
14 vanced computation, modeling, and simulation
15 are strengthened;

16 (C) new magnetic and inertial fusion re-
17 search facilities are selected based on scientific
18 innovation, cost effectiveness, and their poten-
19 tial to advance the goal of practical fusion en-
20 ergy at the earliest date possible;

21 (D) such facilities that are selected are
22 funded at a cost-effective rate;

23 (E) communication of scientific results and
24 methods between the fusion energy science com-



1 community and the broader scientific and tech-
2 nology communities is improved;

3 (F) inertial confinement fusion facilities
4 are utilized to the extent practicable for the
5 purpose of inertial fusion energy research and
6 development; and

7 (G) attractive alternative inertial and mag-
8 netic fusion energy approaches are more fully
9 explored.

10 (3) REPORT ON FUSION MATERIALS AND TECH-
11 NOLOGY PROJECT.—In addition, the plan required
12 by this subsection shall also address the status of,
13 and to the degree possible, the costs and schedules
14 for—

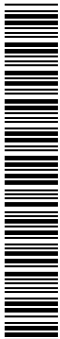
15 (A) the design and implementation of
16 international or national facilities for the test-
17 ing of fusion materials; and

18 (B) the design and implementation of
19 international or national facilities for the test-
20 ing and development of key fusion technologies.

21 **PART 3—SPALLATION NEUTRON SOURCE**

22 **SEC. 21621. DEFINITION.**

23 For the purposes of this part, the term “Spallation
24 Neutron Source” means Department Project 99–E–334,
25 Oak Ridge National Laboratory, Oak Ridge, Tennessee.



1 **SEC. 21622. REPORT.**

2 The Secretary shall report on the Spallation Neutron
3 Source as part of the Department's annual budget submis-
4 sion, including a description of the achievement of mile-
5 stones, a comparison of actual costs to estimated costs,
6 and any changes in estimated project costs or schedule.

7 **SEC. 21623. LIMITATIONS.**

8 The total amount obligated by the Department, in-
9 cluding prior year appropriations, for the Spallation Neu-
10 tron Source may not exceed—

- 11 (1) \$1,192,700,000 for costs of construction;
12 (2) \$219,000,000 for other project costs; and
13 (3) \$1,411,700,000 for total project cost.

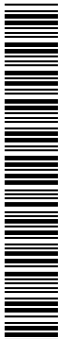
14 **PART 4—MISCELLANEOUS**

15 **SEC. 21631. FACILITY AND INFRASTRUCTURE SUPPORT**
16 **FOR NONMILITARY ENERGY LABORATORIES.**

17 (a) FACILITY POLICY.—The Secretary shall develop
18 and implement a strategy for the nonmilitary energy lab-
19 oratories and facilities of the Office of Science. Such strat-
20 egy shall provide a cost-effective means for—

- 21 (1) maintaining existing facilities and infra-
22 structure, as needed;
23 (2) closing unneeded facilities;
24 (3) making facility modifications; and
25 (4) building new facilities.

26 (b) REPORT.—



1 (1) TRANSMITTAL.—The Secretary shall pre-
2 pare and transmit, along with the President’s budget
3 request to the Congress for fiscal year 2005, a re-
4 port containing the strategy developed under sub-
5 section (a).

6 (2) CONTENTS.—For each nonmilitary energy
7 laboratory and facility, such report shall contain—

8 (A) the current priority list of proposed fa-
9 cilities and infrastructure projects, including
10 cost and schedule requirements;

11 (B) a current ten-year plan that dem-
12 onstrates the reconfiguration of its facilities and
13 infrastructure to meet its missions and to ad-
14 dress its long-term operational costs and return
15 on investment;

16 (C) the total current budget for all facili-
17 ties and infrastructure funding; and

18 (D) the current status of each facilities
19 and infrastructure project compared to the
20 original baseline cost, schedule, and scope.

21 **SEC. 21632. RESEARCH REGARDING PRECIOUS METAL CA-**
22 **TALYSIS.**

23 From the amounts authorized to be appropriated to
24 the Secretary under section 21601, such sums as may be
25 necessary for each of the fiscal years 2004, 2005, and



1 2006 may be used to carry out research in the use of pre-
2 cious metals (excluding platinum, palladium, and rho-
3 dium) in catalysis.

4 **SEC. 21633. NANOTECHNOLOGY RESEARCH AND DEVELOP-**
5 **MENT.**

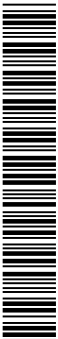
6 (a) IN GENERAL.—The Secretary, acting through the
7 Office of Science, shall implement a Nanotechnology Re-
8 search and Development Program to promote
9 nanotechnology research, development, demonstration,
10 education, technology transfer, and commercial applica-
11 tion activities as necessary to ensure continued United
12 States leadership in nanotechnology across scientific and
13 engineering disciplines.

14 (b) PROGRAM ACTIVITIES.—The activities of the
15 Nanotechnology Research and Development Program shall
16 be designed to—

17 (1) provide sustained support for
18 nanotechnology research and development through—

19 (A) grants to individual investigators and
20 interdisciplinary teams of investigators; and

21 (B) establishment of interdisciplinary re-
22 search centers and advanced technology user fa-
23 cilities;



1 (2) ensure that solicitation and evaluation of
2 proposals under the Program encourage interdiscipli-
3 nary research;

4 (3) expand education and training of under-
5 graduate and graduate students in interdisciplinary
6 nanotechnology science and engineering;

7 (4) accelerate the commercial application of
8 nanotechnology innovations in the private sector;

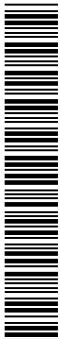
9 (5) ensure that societal and ethical concerns
10 will be addressed as the technology is developed by—

11 (A) establishing a research program to
12 identify societal and ethical concerns related to
13 nanotechnology, and ensuring that the results
14 of such research are widely disseminated; and

15 (B) integrating, insofar as possible, re-
16 search on societal and ethical concerns with
17 nanotechnology research and development; and

18 (6) ensure that the potential of nanotechnology
19 to produce or facilitate the production of clean, inex-
20 pensive energy is realized by supporting
21 nanotechnology energy applications research and de-
22 velopment.

23 (c) DEFINITIONS.—For the purposes of this
24 section—



1 (1) the term “nanotechnology” means science
2 and engineering aimed at creating materials, devices,
3 and systems at the atomic and molecular level; and

4 (2) the term “advanced technology user facil-
5 ity” means a nanotechnology research and develop-
6 ment facility supported, in whole or in part, by Fed-
7 eral funds that is open to all United States research-
8 ers on a competitive, merit-reviewed basis.

9 (d) REPORT.—Within 2 years after the date of enact-
10 ment of this Act, the Secretary shall transmit to the Con-
11 gress a report describing the projects to identify societal
12 and ethical concerns related to nanotechnology and the
13 funding provided to support these projects.

14 **SEC. 21634. ADVANCED SCIENTIFIC COMPUTING FOR EN-**
15 **ERGY MISSIONS.**

16 (a) IN GENERAL.—The Secretary, acting through the
17 Office of Science, shall support a program to advance the
18 Nation’s computing capability across a diverse set of
19 grand challenge computationally based science problems
20 related to departmental missions.

21 (b) DUTIES OF THE OFFICE OF SCIENCE.—In car-
22 rying out the program under this section, the Office of
23 Science shall—

24 (1) advance basic science through computation
25 by developing software to solve grand challenge



1 science problems on new generations of computing
2 platforms;

3 (2) enhance the foundations for scientific com-
4 puting by developing the basic mathematical and
5 computing systems software needed to take full ad-
6 vantage of the computing capabilities of computers
7 with peak speeds of 100 teraflops or more, some of
8 which may be unique to the scientific problem of in-
9 terest;

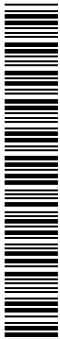
10 (3) enhance national collaboratory and net-
11 working capabilities by developing software to inte-
12 grate geographically separated researchers into ef-
13 fective research teams and to facilitate access to and
14 movement and analysis of large (petabyte) data sets;

15 (4) develop and maintain a robust scientific
16 computing hardware infrastructure to ensure that
17 the computing resources needed to address depart-
18 mental missions are available; and

19 (5) explore new computing approaches and
20 technologies that promise to advance scientific com-
21 puting.

22 (c) HIGH-PERFORMANCE COMPUTING ACT OF 1991
23 AMENDMENTS.—The High-Performance Computing Act
24 of 1991 is amended—

25 (1) in section 4 (15 U.S.C. 5503)—



1 (A) in paragraph (3)—

2 (i) by striking “means” and inserting
3 “and ‘networking and information tech-
4 nology’ mean”; and

5 (ii) by striking “(including vector
6 supercomputers and large scale parallel
7 systems)”; and

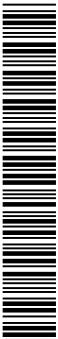
8 (B) in paragraph (4), by striking “packet
9 switched”; and
10 (2) in section 203 (15 U.S.C. 5523)—

11 (A) in subsection (a), by striking all after
12 “As part of the” and inserting “Networking
13 and Information Technology Research and De-
14 velopment Program, the Secretary of Energy
15 shall conduct basic and applied research in net-
16 working and information technology, with em-
17 phasis on—

18 “(1) supporting fundamental research in the
19 physical sciences and engineering, and energy appli-
20 cations;

21 “(2) providing supercomputer access and ad-
22 vanced communication capabilities and facilities to
23 scientific researchers; and

24 “(3) developing tools for distributed scientific
25 collaboration.”;



1 (B) in subsection (b), by striking “Pro-
2 gram” and inserting “Networking and Informa-
3 tion Technology Research and Development
4 Program”; and

5 (C) by amending subsection (e) to read as
6 follows:

7 “(e) AUTHORIZATION OF APPROPRIATIONS.—There
8 are authorized to be appropriated to the Secretary of En-
9 ergy to carry out the Networking and Information Tech-
10 nology Research and Development Program such sums as
11 may be necessary for fiscal years 2004 through 2007.”.

12 (d) COORDINATION.—The Secretary shall ensure that
13 the program under this section is integrated and con-
14 sistent with—

15 (1) the Accelerated Strategic Computing Initia-
16 tive of the National Nuclear Security Administra-
17 tion; and

18 (2) other national efforts related to advanced
19 scientific computing for science and engineering.

20 (e) REPORT.—(1) Before undertaking any new initia-
21 tive to develop new advanced architecture for high-speed
22 computing, the Secretary, through the Director of the Of-
23 fice of Science, shall transmit a report to the Congress
24 describing—



1 (A) the expected duration and cost of the initia-
2 tive;

3 (B) the technical milestones the initiative is de-
4 signed to achieve;

5 (C) how institutions of higher education and
6 private firms will participate in the initiative; and

7 (D) why the goals of the initiative could not be
8 achieved through existing programs.

9 (2) No funds may be expended on any initiative de-
10 scribed in paragraph (1) until 30 days after the report
11 required by that paragraph is transmitted to the Congress.

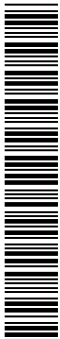
12 **SEC. 21635. NITROGEN FIXATION.**

13 The Secretary, acting through the Office of Science,
14 shall support a program of research, development, dem-
15 onstration, and commercial application on biological nitro-
16 gen fixation, including plant genomics research relevant
17 to the development of commercial crop varieties with en-
18 hanced nitrogen fixation efficiency and ability.

19 **SEC. 21636. DEPARTMENT OF ENERGY SCIENCE AND TECH-**
20 **NOLOGY SCHOLARSHIP PROGRAM.**

21 (a) ESTABLISHMENT OF PROGRAM.—

22 (1) IN GENERAL.—The Secretary shall establish
23 a Department of Energy Science and Technology
24 Scholarship Program to award scholarships to indi-



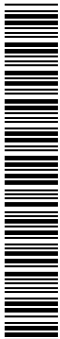
1 viduals that is designed to recruit and prepare stu-
2 dents for careers in the Department.

3 (2) COMPETITIVE PROCESS.—Individuals shall
4 be selected to receive scholarships under this section
5 through a competitive process primarily on the basis
6 of academic merit, with consideration given to finan-
7 cial need and the goal of promoting the participation
8 of individuals identified in section 33 or 34 of the
9 Science and Engineering Equal Opportunities Act
10 (42 U.S.C. 1885a or 1885b).

11 (3) SERVICE AGREEMENTS.—To carry out the
12 Program the Secretary shall enter into contractual
13 agreements with individuals selected under para-
14 graph (2) under which the individuals agree to serve
15 as full-time employees of the Department, for the
16 period described in subsection (f)(1), in positions
17 needed by the Department and for which the individ-
18 uals are qualified, in exchange for receiving a schol-
19 arship.

20 (b) SCHOLARSHIP ELIGIBILITY.—In order to be eligi-
21 ble to participate in the Program, an individual must—

22 (1) be enrolled or accepted for enrollment as a
23 full-time student at an institution of higher edu-
24 cation in an academic program or field of study de-



1 scribed in the list made available under subsection
2 (d);

3 (2) be a United States citizen; and

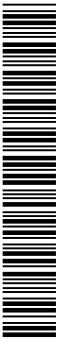
4 (3) at the time of the initial scholarship award,
5 not be a Federal employee as defined in section
6 2105 of title 5 of the United States Code.

7 (c) APPLICATION REQUIRED.—An individual seeking
8 a scholarship under this section shall submit an applica-
9 tion to the Secretary at such time, in such manner, and
10 containing such information, agreements, or assurances as
11 the Secretary may require.

12 (d) ELIGIBLE ACADEMIC PROGRAMS.—The Secretary
13 shall make publicly available a list of academic programs
14 and fields of study for which scholarships under the Pro-
15 gram may be utilized, and shall update the list as nec-
16 essary.

17 (e) SCHOLARSHIP REQUIREMENT.—

18 (1) IN GENERAL.—The Secretary may provide a
19 scholarship under the Program for an academic year
20 if the individual applying for the scholarship has
21 submitted to the Secretary, as part of the applica-
22 tion required under subsection (c), a proposed aca-
23 demic program leading to a degree in a program or
24 field of study on the list made available under sub-
25 section (d).



1 (2) DURATION OF ELIGIBILITY.—An individual
2 may not receive a scholarship under this section for
3 more than 4 academic years, unless the Secretary
4 grants a waiver.

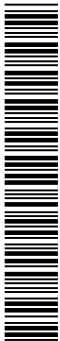
5 (3) SCHOLARSHIP AMOUNT.—The dollar
6 amount of a scholarship under this section for an
7 academic year shall be determined under regulations
8 issued by the Secretary, but shall in no case exceed
9 the cost of attendance.

10 (4) AUTHORIZED USES.—A scholarship pro-
11 vided under this section may be expended for tuition,
12 fees, and other authorized expenses as established by
13 the Secretary by regulation.

14 (5) CONTRACTS REGARDING DIRECT PAYMENTS
15 TO INSTITUTIONS.—The Secretary may enter into a
16 contractual agreement with an institution of higher
17 education under which the amounts provided for a
18 scholarship under this section for tuition, fees, and
19 other authorized expenses are paid directly to the in-
20 stitution with respect to which the scholarship is
21 provided.

22 (f) PERIOD OF OBLIGATED SERVICE.—

23 (1) DURATION OF SERVICE.—The period of
24 service for which an individual shall be obligated to
25 serve as an employee of the Department is, except



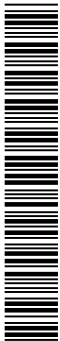
1 as provided in subsection (h)(2), 24 months for each
2 academic year for which a scholarship under this
3 section is provided.

4 (2) SCHEDULE FOR SERVICE.—(A) Except as
5 provided in subparagraph (B), obligated service
6 under paragraph (1) shall begin not later than 60
7 days after the individual obtains the educational de-
8 gree for which the scholarship was provided.

9 (B) The Secretary may defer the obligation of
10 an individual to provide a period of service under
11 paragraph (1) if the Secretary determines that such
12 a deferral is appropriate. The Secretary shall pre-
13 scribe the terms and conditions under which a serv-
14 ice obligation may be deferred through regulation.

15 (g) PENALTIES FOR BREACH OF SCHOLARSHIP
16 AGREEMENT.—

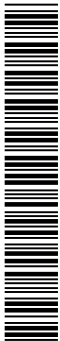
17 (1) FAILURE TO COMPLETE ACADEMIC TRAIN-
18 ING.—Scholarship recipients who fail to maintain a
19 high level of academic standing, as defined by the
20 Secretary by regulation, who are dismissed from
21 their educational institutions for disciplinary rea-
22 sons, or who voluntarily terminate academic training
23 before graduation from the educational program for
24 which the scholarship was awarded, shall be in
25 breach of their contractual agreement and, in lieu of



1 any service obligation arising under such agreement,
2 shall be liable to the United States for repayment
3 within 1 year after the date of default of all scholar-
4 ship funds paid to them and to the institution of
5 higher education on their behalf under the agree-
6 ment, except as provided in subsection (h)(2). The
7 repayment period may be extended by the Secretary
8 when determined to be necessary, as established by
9 regulation.

10 (2) FAILURE TO BEGIN OR COMPLETE THE
11 SERVICE OBLIGATION OR MEET THE TERMS AND
12 CONDITIONS OF DEFERMENT.—Scholarship recipi-
13 ents who, for any reason, fail to begin or complete
14 their service obligation after completion of academic
15 training, or fail to comply with the terms and condi-
16 tions of deferment established by the Secretary pur-
17 suant to subsection (f)(2)(B), shall be in breach of
18 their contractual agreement. When recipients breach
19 their agreements for the reasons stated in the pre-
20 ceding sentence, the recipient shall be liable to the
21 United States for an amount equal to—

22 (A) the total amount of scholarships re-
23 ceived by such individual under this section;
24 plus



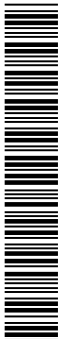
1 (B) the interest on the amounts of such
2 awards which would be payable if at the time
3 the awards were received they were loans bear-
4 ing interest at the maximum legal prevailing
5 rate, as determined by the Treasurer of the
6 United States,
7 multiplied by 3.

8 (h) WAIVER OR SUSPENSION OF OBLIGATION.—

9 (1) DEATH OF INDIVIDUAL.—Any obligation of
10 an individual incurred under the Program (or a con-
11 tractual agreement thereunder) for service or pay-
12 ment shall be canceled upon the death of the indi-
13 vidual.

14 (2) IMPOSSIBILITY OR EXTREME HARDSHIP.—
15 The Secretary shall by regulation provide for the
16 partial or total waiver or suspension of any obliga-
17 tion of service or payment incurred by an individual
18 under the Program (or a contractual agreement
19 thereunder) whenever compliance by the individual is
20 impossible or would involve extreme hardship to the
21 individual, or if enforcement of such obligation with
22 respect to the individual would be contrary to the
23 best interests of the Government.

24 (i) DEFINITIONS.—In this section the following defi-
25 nitions apply:



1 (1) COST OF ATTENDANCE.—The term “cost of
2 attendance” has the meaning given that term in sec-
3 tion 472 of the Higher Education Act of 1965 (20
4 U.S.C. 1087*ll*).

5 (2) INSTITUTION OF HIGHER EDUCATION.—The
6 term “institution of higher education” has the
7 meaning given that term in section 101(a) of the
8 Higher Education Act of 1965 (20 U.S.C. 1001(a)).

9 (3) PROGRAM.—The term “Program” means
10 the Department of Energy Science and Technology
11 Scholarship Program established under this section.

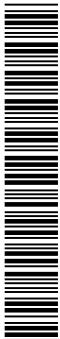
12 **PART 5—GENOMES TO LIFE**

13 **SEC. 21641. GENOMES TO LIFE.**

14 (a) PROGRAM.—

15 (1) ESTABLISHMENT.—The Secretary shall es-
16 tablish a research, development, and demonstration
17 program in genetics, protein science, and computa-
18 tional biology of microbes and plants to support the
19 energy and environmental mission of the Depart-
20 ment.

21 (2) GRANTS.—The program shall support indi-
22 vidual investigators and multidisciplinary teams of
23 investigators through competitive, merit-reviewed
24 grants.



1 (3) CONSULTATION.—In carrying out the pro-
2 gram, the Secretary shall consult with other Federal
3 agencies that conduct genetic and protein research.

4 (b) GOALS.—The program shall have the goal of de-
5 veloping technologies and methods based on the biological
6 functions of microbes and plants that —

7 (1) can facilitate the production of fuels, includ-
8 ing hydrogen;

9 (2) convert carbon dioxide to organic carbon;
10 and

11 (3) detoxify soils and water at Department fa-
12 cilities contaminated with heavy metals and radio-
13 logical materials.

14 (c) PLAN.—

15 (1) DEVELOPMENT OF PLAN.—Within one year
16 after the date of enactment of this Act, the Sec-
17 retary shall prepare and transmit to the Congress a
18 research plan describing how the program author-
19 ized pursuant to this section will be undertaken to
20 accomplish the program goals established in sub-
21 section (b).

22 (2) REVIEW OF PLAN.—The Secretary shall
23 contract with the National Academy of Sciences to
24 review the research plan developed under this sub-
25 section. The Secretary shall transmit the review to



1 the Congress not later than 6 months after trans-
2 mittal of the research plan under paragraph (1),
3 along with the Secretary's response to the rec-
4 ommendations contained in the review.

5 (d) FACILITIES.—In carrying out the program under
6 this section, the Secretary may construct, acquire, and op-
7 erate facilities necessary to carry out this section.

8 (e) PROHIBITION ON BIOMEDICAL OR HUMAN SUB-
9 JECT RESEARCH.—(1) In carrying out this program, the
10 Secretary shall not conduct biomedical research.

11 (2) Nothing in this section shall authorize the Sec-
12 retary to conduct any research or demonstrations—

13 (A) on human cells or human subjects; or

14 (B) designed to have any application with re-
15 spect to human cells or human subjects.

16 **Subtitle G—Energy and**
17 **Environment**

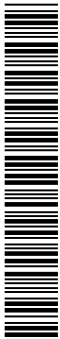
18 **SEC. 21701. AUTHORIZATION OF APPROPRIATIONS.**

19 (a) UNITED STATES-MEXICO ENERGY TECHNOLOGY
20 COOPERATION.—The following sums are authorized to be
21 appropriated to the Secretary to carry out activities under
22 section 21702:

23 (1) For fiscal year 2004, \$5,000,000.

24 (2) For fiscal year 2005, \$6,000,000.

25 (3) For fiscal year 2006, \$6,000,000.



1 (4) For fiscal year 2007, \$6,000,000.

2 (b) WASTE REDUCTION AND USE OF ALTER-
3 NATIVES.—There are authorized to be appropriated to the
4 Secretary to carry out activities under section 21703,
5 \$500,000 for fiscal year 2004.

6 **SEC. 21702. UNITED STATES-MEXICO ENERGY TECHNOLOGY**
7 **COOPERATION.**

8 (a) PROGRAM.—The Secretary shall establish a re-
9 search, development, demonstration, and commercial ap-
10 plication program to be carried out in collaboration with
11 entities in Mexico and the United States to promote en-
12 ergy efficient, environmentally sound economic develop-
13 ment along the United States-Mexico border.

14 (b) PROGRAM MANAGEMENT.—The program under
15 subsection (a) shall be managed by the Department of En-
16 ergy Carlsbad Environmental Management Field Office.

17 (c) TECHNOLOGY TRANSFER.—In carrying out
18 projects and activities under this section, the Secretary
19 shall assess the applicability of technology developed under
20 the Environmental Management Science Program of the
21 Department.

22 (d) INTELLECTUAL PROPERTY.—In carrying out this
23 section, the Secretary shall comply with the requirements
24 of any agreement entered into between the United States
25 and Mexico regarding intellectual property protection.



1 **SEC. 21703. WASTE REDUCTION AND USE OF ALTER-**
2 **NATIVES.**

3 (a) GRANT AUTHORITY.—The Secretary is author-
4 ized to make a single grant to a qualified institution to
5 examine and develop the feasibility of burning post-con-
6 sumer carpet in cement kilns as an alternative energy
7 source. The purposes of the grant shall include
8 determining—

9 (1) how post-consumer carpet can be burned
10 without disrupting kiln operations;

11 (2) the extent to which overall kiln emissions
12 may be reduced;

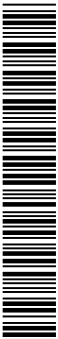
13 (3) the emissions of air pollutants and other
14 relevant environmental impacts; and

15 (4) how this process provides benefits to both
16 cement kiln operations and carpet suppliers.

17 (b) QUALIFIED INSTITUTION.—For the purposes of
18 subsection (a), a qualified institution is a research-inten-
19 sive institution of higher education with demonstrated ex-
20 pertise in the fields of fiber recycling and logistical mod-
21 eling of carpet waste collection and preparation.

22 **SEC. 21704. COAL GASIFICATION.**

23 The Secretary is authorized to provide loan guaran-
24 tees for a project to produce energy from a plant using
25 integrated gasification combined cycle technology of at
26 least 400 megawatts in capacity that produces power at



1 competitive rates in deregulated energy generation mar-
2 kets and that does not receive any subsidy (direct or indi-
3 rect) from ratepayers.

4 **SEC. 21705. PETROLEUM COKE GASIFICATION.**

5 The Secretary is authorized to provide loan guaran-
6 tees for at least one petroleum coke gasification
7 polygeneration project.

8 **SEC. 21706. OTHER BIOPOWER AND BIOENERGY.**

9 The Secretary shall conduct a program to assist in
10 the planning, design, and implementation of projects to
11 convert rice straw, rice hulls, soybean matter, poultry fat,
12 poultry waste, sugarcane bagasse, forest thinnings, and
13 barley grain into biopower and biofuels.

14 **SEC. 21707. COAL TECHNOLOGY LOAN.**

15 There are authorized to be appropriated to the Sec-
16 retary \$125,000,000 to provide a loan to the owner of the
17 experimental plant constructed under United States De-
18 partment of Energy cooperative agreement number DE-
19 FC22-91PC99544 on such terms and conditions as the
20 Secretary determines, including interest rates and upfront
21 payments.

22 **SEC. 21708. FUEL CELL TEST CENTER.**

23 (a) STUDY.—Not later than 1 year after the date of
24 enactment of this Act, the Secretary shall transmit to the
25 Congress a report on the results of a study of the estab-



1 lishment of a test center for next-generation fuel cells at
2 an institution of higher education that has available a con-
3 tinuous source of hydrogen and access to the electric
4 transmission grid. Such report shall include a conceptual
5 design for such test center and a projection of the costs
6 of establishing the test center.

7 (b) AUTHORIZATION OF APPROPRIATIONS.—There
8 are authorized to be appropriated to the Secretary for car-
9 rying out this section \$500,000.

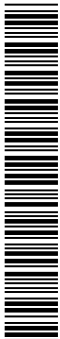
10 **SEC. 21709. FUEL CELL TRANSIT BUS DEMONSTRATION.**

11 The Secretary shall establish a transit bus dem-
12 onstration program to make competitive, merit-based
13 awards for five-year projects to demonstrate not more
14 than 12 fuel cell transit buses (and necessary infrastruc-
15 ture) in three geographically dispersed localities. In select-
16 ing projects under this section, the Secretary shall give
17 preference to projects that are most likely to mitigate con-
18 gestion and improve air quality. There are authorized to
19 be appropriated to the Secretary \$10,000,000 for each of
20 the fiscal years 2004 through 2007 for carrying out this
21 section.

22 **Subtitle H—Management**

23 **SEC. 21801. AVAILABILITY OF FUNDS.**

24 Funds authorized to be appropriated to the Depart-
25 ment under this title shall remain available until expended.

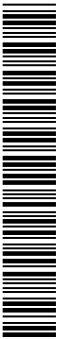


1 **SEC. 21802. COST SHARING.**

2 (a) RESEARCH AND DEVELOPMENT.—Except as oth-
3 erwise provided in this title, for research and development
4 programs carried out under this title, the Secretary shall
5 require a commitment from non-Federal sources of at
6 least 20 percent of the cost of the project. The Secretary
7 may reduce or eliminate the non-Federal requirement
8 under this subsection if the Secretary determines that the
9 research and development is of a basic or fundamental na-
10 ture.

11 (b) DEMONSTRATION AND COMMERCIAL APPLICA-
12 TION.—Except as otherwise provided in this title, the Sec-
13 retary shall require at least 50 percent of the costs directly
14 and specifically related to any demonstration or commer-
15 cial application project under this title to be provided from
16 non-Federal sources. The Secretary may reduce the non-
17 Federal requirement under this subsection if the Secretary
18 determines that the reduction is necessary and appropriate
19 considering the technological risks involved in the project
20 and is necessary to meet the objectives of this title.

21 (c) CALCULATION OF AMOUNT.—In calculating the
22 amount of the non-Federal commitment under subsection
23 (a) or (b), the Secretary may include personnel, services,
24 equipment, and other resources.



1 **SEC. 21803. MERIT REVIEW OF PROPOSALS.**

2 Awards of funds authorized under this title shall be
3 made only after an impartial review of the scientific and
4 technical merit of the proposals for such awards has been
5 carried out by or for the Department.

6 **SEC. 21804. EXTERNAL TECHNICAL REVIEW OF DEPART-**
7 **MENTAL PROGRAMS.**

8 (a) NATIONAL ENERGY RESEARCH AND DEVELOP-
9 MENT ADVISORY BOARDS.—(1) The Secretary shall estab-
10 lish one or more advisory boards to review Department
11 research, development, demonstration, and commercial ap-
12 plication programs in the following areas:

13 (A) Energy efficiency.

14 (B) Renewable energy.

15 (C) Nuclear energy.

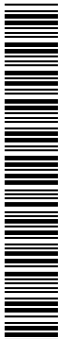
16 (D) Fossil energy.

17 (2) The Secretary may designate an existing advisory
18 board within the Department to fulfill the responsibilities
19 of an advisory board under this subsection, and may enter
20 into appropriate arrangements with the National Academy
21 of Sciences to establish such an advisory board.

22 (b) OFFICE OF SCIENCE ADVISORY COMMITTEES.—

23 (1) UTILIZATION OF EXISTING COMMITTEES.—

24 The Secretary shall continue to use the scientific
25 program advisory committees chartered under the
26 Federal Advisory Committee Act by the Office of



1 Science to oversee research and development pro-
2 grams under that Office.

3 (2) SCIENCE ADVISORY COMMITTEE.—

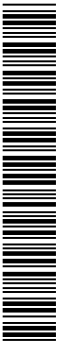
4 (A) ESTABLISHMENT.—There shall be in
5 the Office of Science a Science Advisory Com-
6 mittee that includes the chairs of each of the
7 advisory committees described in paragraph (1).

8 (B) RESPONSIBILITIES.—The Science Ad-
9 visory Committee shall—

10 (i) serve as the science advisor to the
11 Assistant Secretary for Science created
12 under section 209 of the Department of
13 Energy Organization Act, as added by sec-
14 tion 22001 of this Act;

15 (ii) advise the Assistant Secretary
16 with respect to the well-being and manage-
17 ment of the National Laboratories and sin-
18 gle-purpose research facilities;

19 (iii) advise the Assistant Secretary
20 with respect to education and workforce
21 training activities required for effective
22 short-term and long-term basic and applied
23 research activities of the Office of Science;
24 and

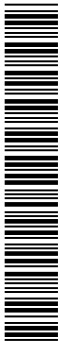


1 (iv) advise the Assistant Secretary
2 with respect to the well being of the uni-
3 versity research programs supported by the
4 Office of Science.

5 (c) MEMBERSHIP.—Each advisory board under this
6 section shall consist of persons with appropriate expertise
7 representing a diverse range of interests.

8 (d) MEETINGS AND PURPOSES.—Each advisory
9 board under this section shall meet at least semi-annually
10 to review and advise on the progress made by the respec-
11 tive research, development, demonstration, and commer-
12 cial application program or programs. The advisory board
13 shall also review the measurable cost and performance-
14 based goals for such programs as established under sec-
15 tion 20002, and the progress on meeting such goals.

16 (e) PERIODIC REVIEWS AND ASSESSMENTS.—The
17 Secretary shall enter into appropriate arrangements with
18 the National Academy of Sciences to conduct periodic re-
19 views and assessments of the programs authorized by this
20 title, the measurable cost and performance-based goals for
21 such programs as established under section 20002, if any,
22 and the progress on meeting such goals. Such reviews and
23 assessments shall be conducted every 5 years, or more
24 often as the Secretary considers necessary, and the Sec-



1 retary shall transmit to the Congress reports containing
2 the results of all such reviews and assessments.

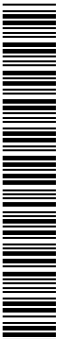
3 **SEC. 21805. IMPROVED COORDINATION OF TECHNOLOGY**
4 **TRANSFER ACTIVITIES.**

5 (a) TECHNOLOGY TRANSFER COORDINATOR.—The
6 Secretary shall designate a Technology Transfer Coordi-
7 nator to perform oversight of and policy development for
8 technology transfer activities at the Department. The
9 Technology Transfer Coordinator shall coordinate the ac-
10 tivities of the Technology Transfer Working Group, and
11 shall oversee the expenditure of funds allocated to the
12 Technology Transfer Working Group, and shall coordinate
13 with each technology partnership ombudsman appointed
14 under section 11 of the Technology Transfer Commer-
15 cialization Act of 2000 (42 U.S.C. 7261c).

16 (b) TECHNOLOGY TRANSFER WORKING GROUP.—
17 The Secretary shall establish a Technology Transfer
18 Working Group, which shall consist of representatives of
19 the National Laboratories and single-purpose research fa-
20 cilities, to—

21 (1) coordinate technology transfer activities oc-
22 ccurring at National Laboratories and single-purpose
23 research facilities;

24 (2) exchange information about technology
25 transfer practices, including alternative approaches



1 to resolution of disputes involving intellectual prop-
2 erty rights and other technology transfer matters;
3 and

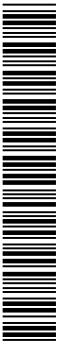
4 (3) develop and disseminate to the public and
5 prospective technology partners information about
6 opportunities and procedures for technology transfer
7 with the Department, including those related to al-
8 ternative approaches to resolution of disputes involv-
9 ing intellectual property rights and other technology
10 transfer matters.

11 (c) TECHNOLOGY TRANSFER RESPONSIBILITY.—
12 Nothing in this section shall affect the technology transfer
13 responsibilities of Federal employees under the Stevenson-
14 Wydler Technology Innovation Act of 1980.

15 **SEC. 21806. SMALL BUSINESS ADVOCACY AND ASSISTANCE.**

16 (a) SMALL BUSINESS ADVOCATE.—The Secretary
17 shall require the Director of each National Laboratory,
18 and may require the Director of a single-purpose research
19 facility, to designate a small business advocate to—

20 (1) increase the participation of small business
21 concerns, including socially and economically dis-
22 advantaged small business concerns, in procurement,
23 collaborative research, technology licensing, and
24 technology transfer activities conducted by the Na-
25 tional Laboratory or single-purpose research facility;



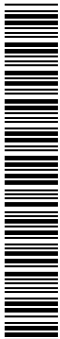
1 (2) report to the Director of the National Lab-
2 oratory or single-purpose research facility on the ac-
3 tual participation of small business concerns in pro-
4 curement and collaborative research along with rec-
5 ommendations, if appropriate, on how to improve
6 participation;

7 (3) make available to small business concerns
8 training, mentoring, and clear, up-to-date informa-
9 tion on how to participate in the procurement and
10 collaborative research, including how to submit effec-
11 tive proposals, and information related to alternative
12 approaches to resolution of disputes involving intel-
13 lectual property rights and other technology transfer
14 matters;

15 (4) increase the awareness inside the National
16 Laboratory or single-purpose research facility of the
17 capabilities and opportunities presented by small
18 business concerns; and

19 (5) establish guidelines for the program under
20 subsection (b) and report on the effectiveness of
21 such program to the Director of the National Lab-
22 oratory or single-purpose research facility.

23 (b) ESTABLISHMENT OF SMALL BUSINESS ASSIST-
24 ANCE PROGRAM.—The Secretary shall require the Direc-
25 tor of each National Laboratory, and may require the Di-



1 rector of a single-purpose research facility, to establish a
2 program to provide small business concerns—

3 (1) assistance directed at making them more ef-
4 fective and efficient subcontractors or suppliers to
5 the National Laboratory or single-purpose research
6 facility; or

7 (2) general technical assistance, the cost of
8 which shall not exceed \$10,000 per instance of as-
9 sistance, to improve the small business concern's
10 products or services.

11 (c) USE OF FUNDS.—None of the funds expended
12 under subsection (b) may be used for direct grants to the
13 small business concerns.

14 (d) DEFINITIONS.—In this section:

15 (1) SMALL BUSINESS CONCERN.—The term
16 “small business concern” has the meaning given
17 such term in section 3 of the Small Business Act
18 (15 U.S.C. 632).

19 (2) SOCIALLY AND ECONOMICALLY DISADVAN-
20 TAGED SMALL BUSINESS CONCERNS.—The term “so-
21 cially and economically disadvantaged small business
22 concerns” has the meaning given such term in sec-
23 tion 8(a)(4) of the Small Business Act (15 U.S.C.
24 637(a)(4)).



1 **SEC. 21807. MOBILITY OF SCIENTIFIC AND TECHNICAL PER-**
2 **SONNEL.**

3 Not later than 2 years after the date of enactment
4 of this section, the Secretary shall transmit a report to
5 the Congress identifying any policies or procedures of a
6 contractor operating a National Laboratory or single-pur-
7 pose research facility that create disincentives to the tem-
8 porary transfer of scientific and technical personnel
9 among the contractor-operated National Laboratories or
10 contractor-operated single-purpose research facilities.

11 **SEC. 21808. NATIONAL ACADEMY OF SCIENCES REPORT.**

12 Within 90 days after the date of enactment of this
13 Act, the Secretary shall enter into an arrangement with
14 the National Academy of Sciences for the Academy to—

15 (1) conduct studies on—

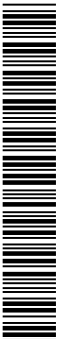
16 (A) the obstacles to accelerating the com-
17 mercial application of energy technology; and

18 (B) the adequacy of Department policies
19 and procedures for, and oversight of, technology
20 transfer-related disputes between contractors of
21 the Department and the private sector; and

22 (2) report to the Congress on recommendations
23 developed as a result of the studies.

24 **SEC. 21809. OUTREACH.**

25 The Secretary shall ensure that each program au-
26 thorized by this title includes an outreach component to



1 provide information, as appropriate, to manufacturers,
2 consumers, engineers, architects, builders, energy service
3 companies, institutions of higher education, facility plan-
4 ners and managers, State and local governments, and
5 other entities.

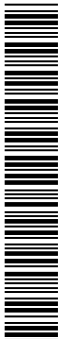
6 **SEC. 21810. LIMITS ON USE OF FUNDS.**

7 (a) COMPETITIVE PROCEDURE REQUIREMENT.—
8 None of the funds authorized to be appropriated to the
9 Secretary by this title may be used to award a manage-
10 ment and operating contract for a nonmilitary energy lab-
11 oratory of the Department unless such contract is com-
12 petitively awarded or the Secretary grants, on a case-by-
13 case basis, a waiver to allow for such a deviation. The Sec-
14 retary may not delegate the authority to grant such a
15 waiver.

16 (b) CONGRESSIONAL NOTICE.—At least 2 months be-
17 fore a contract award for which the Secretary intends to
18 grant such a waiver, the Secretary shall submit to the
19 Congress a report notifying the Congress of the waiver
20 and setting forth the reasons for the waiver.

21 **SEC. 21811. REPROGRAMMING.**

22 (a) DISTRIBUTION REPORT.—Not later than 60 days
23 after the date of the enactment of an Act appropriating
24 amounts authorized under this title, the Secretary shall
25 transmit to the appropriate authorizing committees of the



1 Congress a report explaining how such amounts will be
2 distributed among the authorizations contained in this
3 title.

4 (b) PROHIBITION.—(1) No amount identified under
5 subsection (a) shall be reprogrammed if such reprogram-
6 ming would result in an obligation which changes an indi-
7 vidual distribution required to be reported under sub-
8 section (a) by more than 5 percent unless the Secretary
9 has transmitted to the appropriate authorizing committees
10 of the Congress a report described in subsection (c) and
11 a period of 30 days has elapsed after such committees re-
12 ceive the report.

13 (2) In the computation of the 30-day period described
14 in paragraph (1), there shall be excluded any day on which
15 either House of Congress is not in session because of an
16 adjournment of more than 3 days to a day certain.

17 (c) REPROGRAMMING REPORT.—A report referred to
18 in subsection (b)(1) shall contain a full and complete
19 statement of the action proposed to be taken and the facts
20 and circumstances relied on in support of the proposed
21 action.

22 **SEC. 21812. CONSTRUCTION WITH OTHER LAWS.**

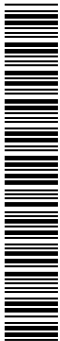
23 Except as otherwise provided in this title, the Sec-
24 retary shall carry out the research, development, dem-
25 onstration, and commercial application programs,



1 projects, and activities authorized by this title in accord-
2 ance with the applicable provisions of the Atomic Energy
3 Act of 1954 (42 U.S.C. et seq.), the Federal Nonnuclear
4 Research and Development Act of 1974 (42 U.S.C. 5901
5 et seq.), the Energy Policy Act of 1992 (42 U.S.C. 13201
6 et seq.), the Stevenson-Wydler Technology Innovation Act
7 of 1980 (15 U.S.C. 3701 et seq.), chapter 18 of title 35,
8 United States Code (commonly referred to as the Bayh-
9 Dole Act), and any other Act under which the Secretary
10 is authorized to carry out such activities.

11 **SEC. 21813. UNIVERSITY COLLABORATION.**

12 Not later than 2 years after the date of enactment
13 of this Act, the Secretary shall transmit to the Congress
14 a report that examines the feasibility of promoting collabo-
15 rations between large institutions of higher education and
16 small institutions of higher education through grants, con-
17 tracts, and cooperative agreements made by the Secretary
18 for energy projects. The Secretary shall also consider pro-
19 viding incentives for the inclusion of small institutions of
20 higher education, including minority-serving institutions,
21 in energy research grants, contracts, and cooperative
22 agreements.



1 **SEC. 21814. FEDERAL LABORATORY EDUCATIONAL PART-**
2 **NERS.**

3 (a) DISTRIBUTION OF ROYALTIES RECEIVED BY
4 FEDERAL AGENCIES.—Section 14(a)(1)(B)(v) of the Ste-
5 venson-Wydler Technology Innovation Act of 1980 (15
6 U.S.C. 3710c(a)(1)(B)(v)), is amended to read as follows:

7 “(v) for scientific research and develop-
8 ment and for educational assistance and other
9 purposes consistent with the missions and ob-
10 jectives of the Department of Energy and the
11 laboratory.”.

12 (b) COOPERATIVE RESEARCH AND DEVELOPMENT
13 AGREEMENTS.—Section 12(b)(5)(C) of the Stevenson-
14 Wydler Technology Innovation Act of 1980 (15 U.S.C.
15 3710a(b)(5)(C)) is amended to read as follows:

16 “(C) for scientific research and development
17 and for educational assistance consistent with the
18 missions and objectives of the Department of Energy
19 and the laboratory.”.

20 **SEC. 21815. INTERAGENCY COOPERATION.**

21 The Secretary shall enter into discussions with the
22 Administrator of the National Aeronautics and Space Ad-
23 ministration with the goal of reaching an interagency
24 working agreement between the 2 agencies that would
25 make the National Aeronautics and Space Administra-
26 tion’s expertise in energy, gained from its existing and



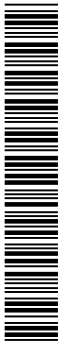
1 planned programs, more readily available to the relevant
2 research, development, demonstration, and commercial ap-
3 plications programs of the Department. Technologies to
4 be discussed should include the National Aeronautics and
5 Space Administration's modeling, research, development,
6 testing, and evaluation of new energy technologies, includ-
7 ing solar, wind, fuel cells, and hydrogen storage and dis-
8 tribution.

9 **TITLE II—DEPARTMENT OF**
10 **ENERGY MANAGEMENT**

11 **SEC. 22001. EXTERNAL REGULATION OF DEPARTMENT OF**
12 **ENERGY.**

13 (a) DEPARTMENT OF ENERGY REPORT.—Not later
14 than 18 months after the date of enactment of this Act,
15 the Secretary shall transmit to the Congress a report on
16 the assumption by the Nuclear Regulatory Commission of
17 the Department's regulatory and enforcement responsibil-
18 ities with respect to nuclear safety, and the assumption
19 by the Occupational Safety and Health Administration of
20 the Department's regulatory and enforcement responsibil-
21 ities with respect to occupational safety and health, at any
22 nonmilitary energy laboratory owned or operated by the
23 Department. The report shall include—

24 (1) a detailed transition plan, drafted in coordi-
25 nation with the Nuclear Regulatory Commission and



1 the Occupational Safety and Health Administration,
2 for termination of self-regulation authority, includ-
3 ing the activities to be coordinated with the Nuclear
4 Regulatory Commission and the Occupational Safety
5 and Health Administration;

6 (2) a description of any issues that would re-
7 quire resolution with the Nuclear Regulatory Com-
8 mission, the Occupational Safety and Health Admin-
9 istration, or other external regulators; and

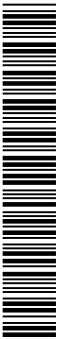
10 (3) an estimate of—

11 (A) the annual cost of administering and
12 implementing external regulation of the nuclear
13 safety and occupational safety and health re-
14 sponsibilities at nonmilitary energy laboratories
15 owned or operated by the Department;

16 (B) the number of Federal and contractor
17 employees required to administer and imple-
18 ment such external regulation; and

19 (C) the extent and schedule by which the
20 Department and the staffs at its nonmilitary
21 energy laboratories would be reduced, and the
22 anticipated cost savings from that reduction.

23 (b) GENERAL ACCOUNTING OFFICE REPORTING RE-
24 QUIREMENT.—The Comptroller General shall provide a re-
25 port not later than 20 months after the date of enactment



1 of this Act that compares the Department's transition
2 plan with the Department's implementation of nuclear
3 safety and occupational safety and health responsibilities
4 under sections 234A and 234C of the Atomic Energy Act
5 of 1954.

6 **SEC. 22002. IMPROVED COORDINATION AND MANAGEMENT**
7 **OF CIVILIAN SCIENCE AND TECHNOLOGY**
8 **PROGRAMS.**

9 (a) RECONFIGURATION OF POSITION OF DIRECTOR
10 OF THE OFFICE OF SCIENCE.—Section 209 of the Depart-
11 ment of Energy Organization Act (42 U.S.C. 7139) is
12 amended by—

13 (1) striking “a Director” and inserting “an As-
14 sistant Secretary, in addition to those appointed
15 under section 203(a),”; and

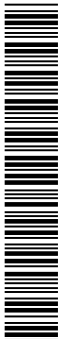
16 (2) striking “Director” and inserting “Assistant
17 Secretary”.

18 (b) TECHNICAL AND CONFORMING AMENDMENTS.—

19 (1) Section 5315 of title 5, United States Code, is amend-
20 ed by—

21 (A) striking “Director, Office of Science, De-
22 partment of Energy.”; and

23 (B) striking “Assistant Secretaries of Energy
24 (6)” and inserting “Assistant Secretaries of Energy
25 (7)”.



1 (2) The table of contents for the Department of En-
2 ergy Organization Act (42 U.S.C. 7101 note) is
3 amended—

4 (A) by striking “Section 209” and inserting
5 “Sec. 209”;

6 (B) by striking “213.” and inserting “Sec.
7 213.”;

8 (C) by striking “214.” and inserting “Sec.
9 214.”;

10 (D) by striking “215.” and inserting “Sec.
11 215.”; and

12 (E) by striking “216.” and inserting “Sec.
13 216.”.

14 **TITLE III—CLEAN SCHOOL**
15 **BUSES**

16 **SEC. 23001. ESTABLISHMENT OF PILOT PROGRAM.**

17 (a) ESTABLISHMENT.—The Secretary of Energy, in
18 consultation with the Administrator of the Environmental
19 Protection Agency, shall establish a pilot program for
20 awarding grants on a competitive basis to eligible entities
21 for the demonstration and commercial application of alter-
22 native fuel school buses and ultra-low sulfur diesel school
23 buses.

24 (b) REQUIREMENTS.—Not later than 3 months after
25 the date of the enactment of this Act, the Secretary shall



1 establish and publish in the Federal register grant require-
2 ments on eligibility for assistance, and on implementation
3 of the program established under subsection (a), including
4 certification requirements to ensure compliance with this
5 title.

6 (c) SOLICITATION.—Not later than 6 months after
7 the date of the enactment of this Act, the Secretary shall
8 solicit proposals for grants under this section.

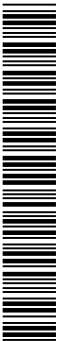
9 (d) ELIGIBLE RECIPIENTS.—A grant shall be award-
10 ed under this section only—

11 (1) to a local or State governmental entity re-
12 sponsible for providing school bus service to one or
13 more public school systems or responsible for the
14 purchase of school buses; or

15 (2) to a contracting entity that provides school
16 bus service to one or more public school systems, if
17 the grant application is submitted jointly with the
18 school system or systems which the buses will serve.

19 (e) TYPES OF GRANTS.—

20 (1) IN GENERAL.—Grants under this section
21 shall be for the demonstration and commercial appli-
22 cation of technologies to facilitate the use of alter-
23 native fuel school buses and ultra-low sulfur diesel
24 school buses in lieu of buses manufactured before



1 model year 1977 and diesel-powered buses manufac-
2 tured before model year 1991.

3 (2) NO ECONOMIC BENEFIT.—Other than the
4 receipt of the grant, a recipient of a grant under this
5 section may not receive any economic benefit in con-
6 nection with the receipt of the grant.

7 (3) PRIORITY OF GRANT APPLICATIONS.—The
8 Secretary shall give priority to awarding grants to
9 applicants who can demonstrate the use of alter-
10 native fuel buses and ultra-low sulfur diesel school
11 buses in lieu of buses manufactured before model
12 year 1977.

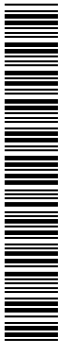
13 (f) CONDITIONS OF GRANT.—A grant provided under
14 this section shall include the following conditions:

15 (1) All buses acquired with funds provided
16 under the grant shall be operated as part of the
17 school bus fleet for which the grant was made for a
18 minimum of 5 years.

19 (2) Funds provided under the grant may only
20 be used—

21 (A) to pay the cost, except as provided in
22 paragraph (3), of new alternative fuel school
23 buses or ultra-low sulfur diesel school buses, in-
24 cluding State taxes and contract fees; and

25 (B) to provide—



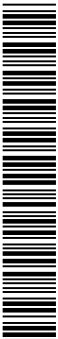
1 (i) up to 10 percent of the price of the
2 alternative fuel buses acquired, for nec-
3 essary alternative fuel infrastructure if the
4 infrastructure will only be available to the
5 grant recipient; and

6 (ii) up to 15 percent of the price of
7 the alternative fuel buses acquired, for nec-
8 essary alternative fuel infrastructure if the
9 infrastructure will be available to the grant
10 recipient and to other bus fleets.

11 (3) The grant recipient shall be required to pro-
12 vide at least the lesser of 15 percent of the total cost
13 of each bus received or \$15,000 per bus.

14 (4) In the case of a grant recipient receiving a
15 grant to demonstrate ultra-low sulfur diesel school
16 buses, the grant recipient shall be required to pro-
17 vide documentation to the satisfaction of the Sec-
18 retary that diesel fuel containing sulfur at not more
19 than 15 parts per million is available for carrying
20 out the purposes of the grant, and a commitment by
21 the applicant to use such fuel in carrying out the
22 purposes of the grant.

23 (g) BUSES.—Funding under a grant made under this
24 section may be used to demonstrate the use only of new



1 alternative fuel school buses or ultra-low sulfur diesel
2 school buses—

3 (1) with a gross vehicle weight of greater than
4 14,000 pounds;

5 (2) that are powered by a heavy duty engine;

6 (3) that, in the case of alternative fuel school
7 buses manufactured in model years 2003 through
8 2006, emit not more than 1.8 grams per brake
9 horsepower-hour of nonmethane hydrocarbons and
10 oxides of nitrogen and .01 grams per brake horse-
11 power-hour of particulate matter; and

12 (4) that, in the case of ultra-low sulfur diesel
13 school buses, emit not more than—

14 (A) for buses manufactured in model year
15 2003, 3.0 grams per brake horsepower-hour of
16 oxides of nitrogen and .01 grams per brake
17 horsepower-hour of particulate matter; and

18 (B) for buses manufactured in model years
19 2004 through 2006, 2.5 grams per brake horse-
20 power-hour of nonmethane hydrocarbons and
21 oxides of nitrogen and .01 grams per brake
22 horsepower-hour of particulate matter,

23 except that under no circumstances shall buses be
24 acquired under this section that emit nonmethane
25 hydrocarbons, oxides of nitrogen, or particulate mat-



1 ter at a rate greater than the best performing tech-
2 nology of the same class of ultra-low sulfur diesel
3 school buses commercially available at the time the
4 grant is made.

5 (h) DEPLOYMENT AND DISTRIBUTION.—The Sec-
6 retary shall seek to the maximum extent practicable to
7 achieve nationwide deployment of alternative fuel school
8 buses and ultra-low sulfur diesel school buses through the
9 program under this section, and shall ensure a broad geo-
10 graphic distribution of grant awards, with a goal of no
11 State receiving more than 10 percent of the grant funding
12 made available under this section for a fiscal year.

13 (i) LIMIT ON FUNDING.—The Secretary shall provide
14 not less than 20 percent and not more than 25 percent
15 of the grant funding made available under this section for
16 any fiscal year for the acquisition of ultra-low sulfur diesel
17 school buses.

18 (j) REDUCTION OF SCHOOL BUS IDLING.—Each
19 local educational agency (as defined in section 9101 of the
20 Elementary and Secondary Education Act of 1965 (20
21 U.S.C. 7801)) that receives Federal funds under the Ele-
22 mentary and Secondary Education Act of 1965 (20 U.S.C.
23 6301 et seq.) is encouraged to develop a policy, consistent
24 with the health, safety, and welfare of students and the
25 proper operation and maintenance of school buses, to re-



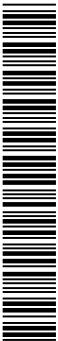
1 duce the incidence of unnecessary school bus idling at
2 schools when picking up and unloading students.

3 (k) ANNUAL REPORT.—Not later than January 31
4 of each year, the Secretary of Energy shall provide a re-
5 port evaluating implementation of the program under this
6 title to the Congress. Such report shall include the total
7 number of grant applications received, the number and
8 types of alternative fuel buses and ultra-low sulfur diesel
9 school buses requested in grant applications, a list of
10 grants awarded and the criteria used to select the grant
11 recipients, certified engine emission levels of all buses pur-
12 chased under the program, and any other information the
13 Secretary considers appropriate.

14 (l) DEFINITIONS.—For purposes of this section—

15 (1) the term “alternative fuel school bus”
16 means a bus powered substantially by electricity (in-
17 cluding electricity supplied by a fuel cell), or by liq-
18 uefied natural gas, compressed natural gas, liquefied
19 petroleum gas, hydrogen, propane, or methanol or
20 ethanol at no less than 85 percent by volume;

21 (2) the term “idling” means operating an en-
22 gine while remaining stationary for more than ap-
23 proximately 15 minutes, except that such term does
24 not apply to routine stoppages associated with traf-
25 fic movement or congestion; and



1 (3) the term “ultra-low sulfur diesel school
2 bus” means a school bus powered by diesel fuel
3 which contains sulfur at not more than 15 parts per
4 million.

5 **SEC. 23002. FUEL CELL BUS DEVELOPMENT AND DEM-**
6 **ONSTRATION PROGRAM.**

7 (a) ESTABLISHMENT OF PROGRAM.—The Secretary
8 shall establish a program for entering into cooperative
9 agreements with private sector fuel cell bus developers for
10 the development of fuel cell-powered school buses, and
11 subsequently with not less than 2 units of local govern-
12 ment using natural gas-powered school buses and such
13 private sector fuel cell bus developers to demonstrate the
14 use of fuel cell-powered school buses.

15 (b) COST SHARING.—The non-Federal contribution
16 for activities funded under this section shall be not less
17 than—

18 (1) 20 percent for fuel infrastructure develop-
19 ment activities; and

20 (2) 50 percent for demonstration activities and
21 for development activities not described in paragraph
22 (1).

23 (c) FUNDING.—No more than \$25,000,000 of the
24 amounts authorized under section 23004(a) may be used



1 for carrying out this section for the period encompassing
2 fiscal years 2004 through 2006.

3 (d) REPORTS TO CONGRESS.—Not later than 3 years
4 after the date of the enactment of this Act, and not later
5 than October 1, 2006, the Secretary shall transmit to the
6 Congress a report that—

7 (1) evaluates the process of converting natural
8 gas infrastructure to accommodate fuel cell-powered
9 school buses; and

10 (2) assesses the results of the development and
11 demonstration program under this section.

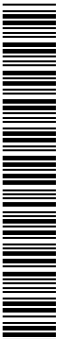
12 **SEC. 23003. DIESEL RETROFIT PROGRAM.**

13 (a) ESTABLISHMENT.—The Administrator of the En-
14 vironmental Protection Agency and the Secretary shall es-
15 tablish a pilot program for awarding grants on a competi-
16 tive basis to eligible recipients for the demonstration and
17 commercial application of retrofit technologies for diesel
18 school buses.

19 (b) ELIGIBLE RECIPIENTS.—A grant shall be award-
20 ed under this section only—

21 (1) to a local or State governmental entity re-
22 sponsible for providing school bus service to one or
23 more public school systems; or

24 (2) to a contracting entity that provides school
25 bus service to one or more public school systems, if



1 the grant application is submitted jointly with the
2 school system or systems which the buses will serve.

3 (c) CONDITIONS OF GRANT.—A grant provided under
4 this section may be used only to demonstrate the use of
5 retrofit emissions-control technology on diesel buses
6 that—

7 (1) operate on ultra-low sulfur diesel fuel; and
8 (2) were manufactured in model year 1991 or
9 later.

10 (d) VERIFICATION.—Not later than 3 months after
11 the date of enactment of this Act, the Administrator shall
12 publish in the Federal Register procedures to verify—

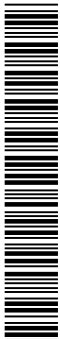
13 (1) the retrofit emissions-control technology to
14 be demonstrated; and

15 (2) that buses on which retrofit emissions-con-
16 trol technology are to be demonstrated will operate
17 on diesel fuel containing not more than 15 parts per
18 million of sulfur.

19 **SEC. 23004. AUTHORIZATION OF APPROPRIATIONS.**

20 (a) SCHOOL BUS GRANTS.—There are authorized to
21 be appropriated to the Secretary for carrying out this title,
22 to remain available until expended—

23 (1) \$90,000,000 for fiscal year 2004;
24 (2) \$100,000,000 for fiscal year 2005; and
25 (3) \$110,000,000 for fiscal year 2006.



1 (b) RETROFIT GRANTS.—There are authorized to be
2 appropriated to the Administrator of the Environmental
3 Protection Agency and the Secretary such sums as may
4 be necessary for carrying out section 23003.

